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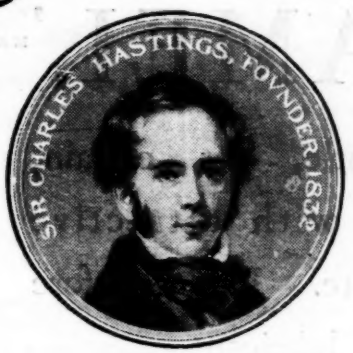

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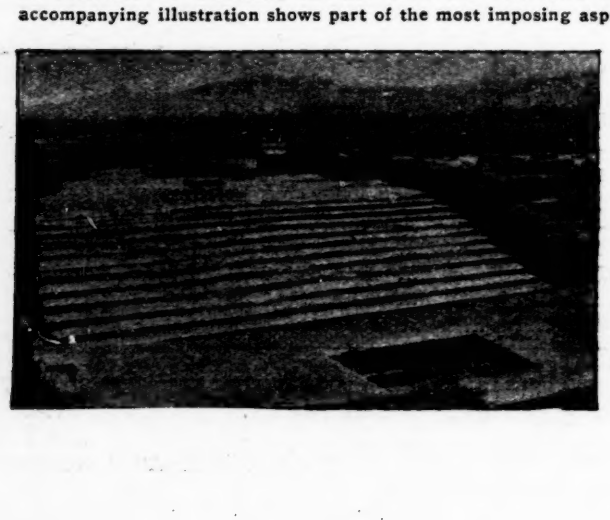
A PAGE FROM THE UNWRITTEN HISTORY OF THE GREAT CIVILISATION OF CRETE SHOWING A CHARACTERISTIC ARCHITECTURAL FEATURE.—The architect of fine conceptions produced the pyramid in Egypt; in Crete he built grandly designed stairways. He was a very early pioneer of our Western architecture and had no successor for centuries, for not even the celebrated staircases of Rome were so fine as those of Crete. The accompanying illustration shows part of the most imposing aspect of one of three fine stairways by which the King's Palace at Phæstos was approached. The beautiful shallow steps are 45 feet wide, 28 inches broad and only about 4½ inches in height; they are made of well-fitted limestone slabs. Attention has been drawn to the contrast between the free open style of the architecture of the palaces of the Sea Kings of Crete and that of the Norman castle with its winding narrow stairs, to the relation between the style of building and the state of society in which it arose. It is believed that in Crete large concourses of people—perhaps guilds and orders—were admitted to audience of the Sovereign, and this implies great sense of security and a well-ordered society. Receptions would be held in the Great Hall of State reached by the grand stairway.



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An Address
ON
TUBERCULIN IN THE DIAGNOSIS AND TREATMENT OF TUBERCULOSIS.*

BY
SIR ROBERT PHILIP, M.D., LL.D., F.R.S.E.,
PROFESSOR OF TUBERCULOSIS AND EXAMINER IN MEDICINE, UNIVERSITY OF EDINBURGH.

IN current statement as to the significance of tuberculin in relation to tuberculosis—and still more as to its practical application—one is frequently up against a looseness of conception regarding essential facts. These facts form the basis of any sound practical application of tuberculin in diagnosis or treatment. While the facts are in chief part definitely determined, there has been little attempt to correlate them as the basis of practical procedure.

My aim is to recall fundamental positions and try to show how these afford points of departure for practical observations regarding tuberculosis, with a view to the final goal of *de*tuberculization. This will include considerations bearing on both diagnosis and treatment. In particular I shall take the opportunity of urging once more the therapeutic value of the *percutaneous* exhibition of tuberculin as recommended by me for many years.

While the percutaneous method is serviceable in the treatment of tuberculosis generally, it has a special range of application in the earlier manifestations. It exerts a remarkable inhibitory influence on the first buddings of tuberculosis in childhood. Continued observation as to its effects throughout long periods in many types of tuberculosis has led me to conclude that the method, consistently applied, is capable of effecting the nearest approach to *de*tuberculization yet realized.

Experimental Tuberculosis.

The first postulate is a clear conception of tuberculosis, or, stated otherwise, of the process and effects of tuberculization. When an animal, say a guinea-pig, is inoculated with a sufficient dose of tubercle bacilli, whether by injection into the tissues or by inhalation, the animal becomes tuberculized. In illustration, take the effects following the subcutaneous introduction of bacilli—for example, into the groin. Within ten days or thereabout, a local sore is produced at the point of puncture, which tends to continue in indolent fashion throughout the life of the animal. Following the appearance of the sore, more distant effects are speedily registered—first in lymphatic glands nearest to the sore, and then successively in glands and groups of glands at increasing distance from the initial lesion. Ultimately the lymphatic system tends to be involved universally. At varying dates the several viscera—spleen, liver, lungs, kidney—become implicated. The order of events is subject to variation, according as the position of primary inoculation is varied. The histological changes are essentially similar throughout the process. These manifestations in glands and viscera, however variable in degree, constitute collectively the *local effects* of tuberculization.

In addition to these, and dependent on the gradual extension throughout glands and viscera, may be registered more general changes—conveniently termed *systemic effects*. While at first the inoculated animal may present little evidence of disturbance, maintaining and perhaps even increasing in weight, physiological disturbance may be observed sooner or later. The animal tends to assume a shabby aspect, natural firmness is replaced by hypotonus, weight is dropped, the quality of the coat deteriorates, and spontaneous motility slackens. An advancing marasmus leads towards death. Such disturbance forms collectively the systemic effects of tuberculization.

Complete Diagnosis.

What occurs in the inoculated animal—guinea-pig, rabbit, or other—may be traced in the tuberculized human subject, with variations, according to the point of primary inoculation, the dose of infection, and the resistance offered, influenced as the last may be by initial qualities in the individual and by varying conditions of environment. In concluding a diagnosis in the human subject it is of the first importance that observation should be directed explicitly and fully to *both* groups of phenomena.

Local (focal) effects in viscera and other structures must be carefully searched for throughout the body. We must get away from undue concentration on one or other focal manifestation, wherever that may happen to be. It goes without saying that a local effect may be such as to call for immediate local treatment, whether in gland, lung, kidney, or elsewhere. But the adoption of such local measures must not be allowed to obscure the presence of tuberculosis in other organs and tissues. The diagnosis of local disorder must be as complete as possible. Beyond the local disturbance, a careful estimate must be made of the degree of general physiological disturbance—in other words, of the *systemic* effects of tuberculization, as these may be registered by evidence of neuro-muscular intoxication (languor, feeling of tiredness, muscular dystrophy, vasomotor phenomena, etc.), by temperature variation, circulatory failure, etc.

The diagnosis, then, of tuberculosis in a given case should be much more complete and definite than it generally is. The determination that the tubercle bacillus is the cause of symptoms occurring in relation to lung, kidney, or other organ—whether that determination be based on actual discovery of the tubercle bacillus in discharge or excretion or on other grounds—is merely the first step to the completer diagnosis which is essential in every instance. The complete diagnosis must be based on the fullest examination possible and be given in terms both of local and of systemic effects.

Tuberculin in Diagnosis.

Tuberculin—using that term in wide sense to include the considerable variety of extracts obtainable by various processes from a culture of the tubercle bacillus—may be said to possess, by reason of its origin and its effect on tuberculized individuals, specific relationship to tuberculosis.

The animal inoculated with tubercle bacilli and the tuberculous patient respond in remarkable fashion to tuberculin. While the individual who remains free of tuberculous infection can tolerate large doses without production of symptoms, the individual who is tuberculized, even in slight degree, yields a response both local (focal) and systemic. The nicety of diagnosis by means of tuberculin depends on the exactness with which the response, focal and systemic, is appraised.

The *focal* effects consequent on a test injection of tuberculin are most directly illustrated by the changes observable in a superficial patch of lupus. These include congestion with increased redness and swelling of the patch itself and the neighbouring tissue, with subsequent exudation and, it may be, crust formation, the effects lasting for several days. The focal effects which are so evident on the surface in the case of lupus are reproduced in similar fashion—it may be in aggravated degree—in relation to tuberculous foci wherever situated in the body. They are to be carefully sought for by all the available methods of physical examination.

In addition to the focal results, *systemic* effects from tuberculin may be traced in the occurrence of malaise and probably disturbance of temperature and circulation. The systemic effects, which may be slight in a case of limited lupus, are correspondingly greater according as the area involved is larger. They become pronounced, and may even be serious, where the foci of tuberculosis are extensive or numerous, more especially in the case of visceral involvement.

Rationale of Tuberculin as a Therapeutic Agent.

In the employment of tuberculin for therapeutic purposes the twofold aspect of tuberculosis must be kept steadily in view. For effective cure both focal and systemic effects of tuberculin are serviceable. If tuberculosis is to be cured locally, wherever the focus be situated, there must be a hastening of the natural tendency towards cicatrization. Such cicatrization is the basis of permanent arrest of the tuberculous process, whatever be the tissue immediately involved. The local stimulation by tuberculin at each tuberculous focus is an important step towards that end. The remarkable effects in this direction are conveniently studied from week to week in connexion with a superficially placed tuberculous lesion under treatment by tuberculin. In the current discussion of tuberculin therapy too little attention seems to have been directed towards this aspect of the subject.

The systemic intoxication occurring in tuberculosis is countered, through the antigenic properties of tuberculin, by the elaboration within the affected system of antibodies or the enrichment of these, if they are to be conceived as already existing.

* Delivered at the Tuberculosis Society of Scotland.

Choice of Tuberculin.

The group of fluids collectively termed tuberculins is not very well defined. Remarkable differences of opinion have emerged as to the relative value of different tuberculins. Amidst such diversity it is difficult either to arbitrate or reconcile.

Broadly stated, the conclusion I have formed, after prolonged observation in different directions, is that a tuberculin is likely to be serviceable in proportion to the closeness of its relationship to the tubercle bacillus and the directness of its mode of production. It has seemed to me that the simpler the constitution of the culture medium on which the tubercle bacillus is grown, the more likely will the first of these conditions be fulfilled. On that account the tuberculin of Béraneck has been advocated by me for therapeutic purposes—obtained as it is by a simple process of extraction from a growth of tubercle in a medium free from the addition of artificial peptones.

Whatever be the tuberculin employed, the rationale of its activity in both diagnosis and treatment seems to be that when introduced into the body it acts as an antigen. Tuberculin reactions are based on the interreaction of antigen and antibody in presence of complement.

Since the first introduction of tuberculin in 1890 I have used a considerable variety of products. The net result of those observations has been to reinforce the conclusion based on more theoretic considerations. The tuberculins I use most commonly—both for diagnosis and for treatment (the latter especially in ways to be detailed presently)—are Koch's original tuberculin and Béraneck's tuberculin, in varying excipient and dilution, according to the nature of the case and the purpose in view.

METHOD OF EMPLOYMENT IN DIAGNOSIS.

The familiar division into *subcutaneous*, *cutaneous*, and *percutaneous* methods recalls sufficiently the chief points.

(*a*) *Subcutaneous.*

As was natural, Koch's early proposals were on the line of subcutaneous injection, and attention was drawn to effects following such introduction into the tuberculized subject. These results were suitably grouped as (1) *general*—for example, temperature and pulse disturbance; (2) *focal*—that is, changes occurring in the tuberculized area such as I have already described in relation to lupus; and (3) *local*—that is, changes occurring more or less definitely about the point of puncture.

(*b*) *Cutaneous and Percutaneous.*

The last-named results—that is, local results—are conspicuous in proportion as the tuberculin in course of introduction comes into contact with the skin structures. Such evident local phenomena naturally became the object of closer observation on the part of numerous workers. Thus emerged the surface reaction associated with the name of von Pirquet, and that associated with the name of Moro.

It is needless to go into details of procedure in respect of these surface tests or the interpretation of results thereby obtained. It is sufficient to recall the fact that the wide application of such methods, which speedily followed von Pirquet's pronouncement, resulted in a fresh orientation of the tuberculous problem—in respect more especially of the frequency of infection and its incidence in childhood.

The observations based on the von Pirquet and allied procedure have proved of epidemiological rather than immediate clinical value. They have revealed that tuberculosis is almost universally distributed throughout civilized communities and that the occurrence of infection takes place for the most part during childhood. A positive reaction to the von Pirquet or to the Moro test indicates that the patient is tuberculized. So long as the reaction remains positive the patient cannot be said to be *de*tuberculized in the strict sense, whatever course of treatment may have been followed.

This negative fact has its reassuring aspect in light of the "phenomenon of Koch." The tuberculized animal is not infected afresh by the introduction of living tubercle bacilli. The results following attempts to reinoculate an already tuberculized animal differ widely from those following the primary inoculation and are comparable with the results following a considerable dose of tuberculin when administered to the tuberculous subject.

The further life history of the tuberculized individual is dependent on the degree of his resistance. This varies from time to time by reason of varying physiological conditions of the individual himself and variations in the conditions of his environment.

Interpretation of Response.

While the local manifestations following the diagnostic test may reveal little beyond the fact that the subject of the test is tuberculized, the systemic, and, in still greater degree, the focal effects are much more definite and detailed. When carefully scrutinized and analysed they are capable of affording exact information—both qualitative and quantitative—as to the presence and distribution of the disease.

A correct interpretation of the evidence thus attainable is dependent on the experience of the observer and the delicacy of the methods employed. When properly carried out, the procedure affords a demonstration regarding the extent and character of the existing tuberculous involvement which is remarkably precise. Few diagnostic procedures in clinical medicine possess greater nicety in respect of the information thereby obtained. Of attendant risks frequently cited by critics of tuberculin I have seen none, when the tests have been competently carried out. The postulate of competence in this case is no less necessary than in the case of many other exact clinical methods.

METHODS OF EMPLOYMENT IN TREATMENT.

(*a*) *Subcutaneous.*

The therapeutic application of tuberculin has for the most part been carried out by means of subcutaneous injection. The value of the procedure has been assessed variously by different writers. From the statements made in current literature one fact seems to emerge clearly—namely, that the judgements expressed are frequently second-hand, not based on serious observations of the writer himself. Sometimes, even if based on the writer's experience, negative statements are less convincing than they might be by reason of apparent haste and insufficiency in the procedure that has been followed.

The competing claims of different schools of thought as to the rationale of the action of tuberculin have led to confusion and embarrassment. Exaggerated claims for one or other scheme of dosage have been the fruitful cause of not unnatural scepticism on the part of the practical man who, in rule of thumb fashion, may have tried one or other system and found it wanting.

The continuous use—since its introduction—of tuberculin in suitable cases has convinced me that the procedure has specific curative value. The case must be properly selected—in other words, the remedy must be exhibited at the appropriate stage—and the dose must be suitably graduated according to the result obtained from time to time in the given case. These are details which demand judgement based on experience. The interval between successive doses must be similarly gauged, as also the duration of treatment and the desirability, after appropriate resting period, of a further series of injections. Some cases lend themselves to less intense, others to more intense, lines of treatment. A satisfactory result cannot be looked for unless efficient treatment be maintained for a sufficient length of time. Throughout the whole period of treatment watchful care will be taken to detect the slightest expression of super- (hyper-) susceptibility. If this supervene, dosage should commonly be reduced or the exhibition of tuberculin suspended for the time being.

Technique.—The selected tuberculin is suitably diluted with normal saline, with the addition of 1/2 per cent. phenol in the case of weaker solutions for purposes of conservation. With simple aseptic precautions, the injection is conveniently made into the areolar tissue beneath the skin of the back. Care should be taken that the point of the needle pierces the skin completely. In this way the occurrence of local irritation and swelling (phlegmon) about the point of puncture is avoided.

(*b*) *Cutaneous and Percutaneous.*

Observation of the effects produced locally in relation to the skin have led to the exhibition of tuberculin cutaneously and percutaneously.

Cutaneous (Sahli's Method).—Thus Sahli was led to substitute for subcutaneous injections a process of multiple cutaneous vaccinations by means of a special needle. More recently he has introduced the practice of intradermic injection, the tuberculin being deliberately introduced *into* the skin tissue. He has shown that a considerable part of the tuberculin thus injected is absorbed and produces general effects. He believes that the intensity of the intradermic

reaction affords a gauge of the degree of immunity of the patient—that is to say, of his susceptibility to tuberculin—and is at the same time a guide to the determination of the appropriate dose, and so to the avoidance of troublesome reactions, systemic or focal. Treatment is thus directed from time to time by effects open to the eye of the physician. The evidence submitted by that distinguished observer in favour of the therapeutic value of tuberculin and of the efficacy of this method of introduction is convincing.

Percutaneous (Author's Method).—For some twelve years I have been making extensive observations on the effects of the exhibition of tuberculin by *percutaneous* as opposed to subcutaneous method. These observations have led to very interesting results in a number of directions. For the present I limit myself to a brief statement regarding a therapeutic method which the experience of these years has remarkably justified.

One of the first points to emerge in the course of these studies was that, when tuberculin in varying combinations was rubbed firmly into the skin of a tuberculous patient, it was freely absorbed. Moro observed that a local skin eruption followed the inunction of tuberculin mixed with lanolin, and recommended the procedure for diagnostic purposes. Petruschky has testified to the absorption through the unbroken skin of tuberculin exhibited in the form of a liniment which he used in treatment.

Observations on a great variety of subjects satisfied me that the obvious local eruption was in many cases associated with signs of focal reaction, and in much slighter degree with evidence of general reaction. The focal changes may be readily followed in cases of lupus and other superficial manifestations of tuberculosis, as also in glandular tuberculosis. It is likewise traceable in pulmonary and other visceral tuberculosis.

Results and Advantages of Percutaneous Method.

My therapeutic procedure is based on these facts. Tuberculin administered percutaneously by inunction is absorbed and exerts a specific influence on tuberculous processes wherever situated, analogous to those resulting from subcutaneous injection. The curative influence becomes speedily obvious. I have records of its successful use in a great variety of tuberculous manifestations.

Assuming its therapeutic value, the method has numerous advantages over the other methods of exhibition. Something may be said for the absence of pain or discomfort. The procedure is not an operation in the mind of the patient. This has significance in all cases, but especially in children—the dread of the recurring puncture is excluded. The local (skin) reaction, while generally definite enough, causes little if any discomfort. The cutaneous response seems to afford in some degree a gauge of the susceptibility of the patient. In this way dosage may be regulated in respect of amount and frequency.

In simpler cases, with a few definite instructions from the physician, the method may be carried out to some extent by an intelligent nurse or parent, or, it may be, by the patient himself. In pulmonary and other visceral tuberculosis, greater caution is, of course, necessary, and procedure, dosage, etc., will be guided by observation of focal and systemic effects, in addition to those occurring on the skin surface. This necessitates careful surveillance on the part of the medical attendant.

The curative influence on superficial tuberculous foci (cutaneous, glandular, etc.) is commonly apparent within a few weeks and is as a rule continuous. Thus, for example, a crude agglomeration of enlarged glands becomes progressively reduced in size, the indefinite mass is resolved into individual discrete glands, each of which tends to get smaller and smaller until finally reduced to a mere fibrous remnant. These shotty remains may be felt for a long time. The process of recovery by cicatrization may similarly be followed in scrofuloderma and lupus. In the latter the advance of the curative process is, as might be expected, relatively slow. A similar retrogressive influence may commonly be traced in visceral tuberculosis.

Anticipative Detuberculization.

I have alluded to the advantage which the percutaneous method has in the case of children in respect of ease of administration. Its continued use in children leads to much more significant results. When the treatment (instituted, it may be, for an enlarged gland) is maintained for months—that is, long after the gland for which it was begun seems to have recovered—there may be frequently traced evidence of a more general influence on enlarged lymphatic glands throughout the body, associated with a general improvement of health and condition, which is justly interpreted as an expression of progressive *de*tuberculization. Our records include many children in whom such detuberculization has been effectually achieved. The remarkable progress from week to week compels attention.

I strongly advise the adoption of this line of treatment on the earliest indication of chronic glandular enlargement in children. In this way the process of tuberculization—so frequent in children—may be successfully countered at a time when the advancing infection is limited to the lymphatic system. By an arrest at that stage the graver incidents due to involvement of viscera are anticipated and prevented. Such a curative and preventive course of treatment may be suitably maintained for months without any disturbance of the child's ordinary life. The exhibition of tuberculin by inunction has the advantage that in most cases it interferes little with the life and occupation of the patient.

Formulae for Percutaneous Administration.

In developing the percutaneous method I have made very prolonged observations with various tuberculins in varying excipients. On the whole I am inclined to recommend the use of either Koch's original tuberculin or Béraneck's tuberculin. Both commonly effect a satisfactory surface response. Either tuberculin is used in varying strength from 10 per cent. up to 50 per cent. As excipient I prefer "eucerin"—that is, a mixture of 5 parts of oxycholesterine from wool fat and 95 parts of paraffin ointment. Eucalyptol in small quantities may be added for conservation of the ointment as in the following formula:

℞	Tuberculin (Orig. K.)	10–50 per cent.
	Eucalyptol	5 per cent.
	Eucerin	ad 100.

Misce bene.

Sig.: Tuberculin ointment, with caution.

For simple cases treatment may conveniently be begun with 25 per cent. tuberculin. In young subjects, or where there is doubt as to the number and extent of foci involved, it is well to commence with 10 per cent. When the response to the lower dosage is slight, the proportion of the tuberculin is increased. In all cases attention must be paid not only to the local response but also to the focal and systemic effects.

The actual amount of tuberculin applied to the skin in a straightforward case (using, say, 25 per cent. dilution) may be estimated as approximately 0.1 c.cm. The ointment containing this is rubbed (worked) into the cleansed skin over an area of 1 to 2 square inches by means of a small sterilized glass rod. As already indicated, the inunction may be suitably repeated—in the absence of contraindication—once weekly. Where the response is slight the applications may be made at shorter intervals.

Conclusion.

It is an essential postulate for effective approach to the treatment of tuberculosis that we have in view the significance and potential of tuberculous infection in the life history of the infected individual. The possible resultants from infection are extremely various both in kind and in degree. Granted that a child has become infected, the variety of expression of such tuberculization is illimitable; from slighter manifestations hardly registrable, to one or other of the graver forms which may lead to crippling or death—and this at any point throughout life, short or long as that may be.

In order to meet the width and gravity of the issue, the aim of therapeutic procedure must be radical—that is, directed, not, as unfortunately much of the interference presently countenanced is, towards a mere incident of the disease, but towards the ultimate, essential cause of the spreading infection.

If the validity of any method of *de*tuberculization be established it is clear that the earlier in the life history of the infected individual it is adopted, the speedier and completer will be the effect achieved. It is because extensive observations on a great variety of clinical conditions and at different ages have convinced me that the method proposed has effective value, not only in limitation of local effects but in the direction of general detuberculization, that I solicit for it your consideration and a *patient* trial. "Lightning" results are precluded by the nature of the process. It behoves us to remember that if it takes long to come, tuberculosis, at the best, takes long to go.

An Address
ON
CARDIAC PROBLEMS IN ADOLESCENT LIFE.

DELIVERED TO THE BUCKINGHAMSHIRE DIVISION OF THE BRITISH MEDICAL ASSOCIATION

BY

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THE problems in connexion with disease and disturbance of the heart vary to some extent with the period of life. During childhood and youth we find the foundation laid of organic heart disease, which in many cases causes no inconvenience to the patient until later on in life. On the other hand, the disease may have been so severe in childhood, especially in cases untreated, that the whole adolescent life is seriously crippled. Advancing years bring their degenerative changes, cardiac and vascular, of which not a trace is present in early life. Acute illnesses in the young are not accompanied by those serious cardiac complications which so often lead to cardiac failure in later life. The problems which I bring before you to-day are largely the ones which have confronted me in my ordinary work and which I had to try first to understand and then to solve. You will find that the ordinary textbooks rather leave you in the air as regards these problems because it is not their function to deal with the actual experiences of medical life and work. I propose, then, to give some hints as to how to approach these problems of cardiac disturbance and cardiac disease, so as to enable you to deal with the prognosis and treatment of the individual cases you are called on to deal with in practice.

1. CONGENITAL HEART DISEASE.

I do not refer here to cases which have been recognized early and watched through infancy and childhood, but to the unexpected discovery of a cardiac lesion, usually through the presence of a cardiac murmur. The boy or girl may be quite well and happy, the parents may have had no cause to suspect hidden trouble, but the doctor is often pained and puzzled and anxious as to what he ought to do. The murmur is often loud—in fact some of the loudest murmurs are found in connexion with congenital lesions. It is usually systolic in time, loudest at the base of the heart or at the left side of the sternum, and often quite audible in the back. On a systolic murmur alone it is not wise to make a diagnosis of the exact lesion—nor is it necessary. If a double murmur is heard at the base, running through systole and diastole—the so-called mill-wheel murmur—one can with confidence diagnose a patent ductus arteriosus. This is sometimes taken to be the double murmur of aortic disease—obstruction and regurgitation—but to anyone who is familiar with the characteristic sound of an aortic regurgitant murmur the difference ought to be manifest. The changes in the heart and in the circulation which follow from a double aortic lesion are quite different from those in a patent ductus arteriosus case.

We return to our patient with the evidence of a congenital heart lesion and his puzzled doctor. The first comforting fact is that if the boy has reached the age of 12 or 15 years, the congenital lesion cannot have been very severe, for if it had the boy would have died in early life. The mortality associated with congenital heart disease is very high during the first five years of life, either from cardiac failure or defective circulation. So that the fact that the patient has passed through childhood successfully is a hopeful sign.

The doctor will next make a general survey of his patient from the point of view of his physique and development. If he finds that the boy has grown normally and has the development suitable to his years, he may also be reassured as to the degree of congenital defect. It may be laid down as a general law that if any vital organ has had its functional capacity impaired from the time of birth there will follow a corresponding defect in the normal general development of the body. This condition, known as infantilism or dwarfism, is seen as the result of congenital disease (with impaired function) of the liver, the intestines, the pancreas, the kidneys, the lungs, and the heart. Hence if we find our young patient normally developed we have an indication not to form a gloomy prognosis.

Another question to be settled is, What sort of life has the patient been able to lead? Has he led the ordinary life of childhood, or has he been unable to engage in the games and exercises of his companions? If the parents are unaware of any disability, or if the boy has been leading an ordinary life, then we have most important evidence as to the small significance of the congenital lesion. You may count as of no importance the presence of a murmur, however loud it may be, if the boy holds his own at cricket and football. If there has been no disability of the heart from the functional point of view, you will probably find no evidence of dilatation or hypertrophy in the ventricles, or any physical change in the heart other than the murmur.

On the other hand, there may have been noticed a certain limitation in the patient's ability to undergo any active or prolonged exertion within the normal powers of his years. In such a case you will probably find some change in the size of the heart, usually in the shape of hypertrophy of the right ventricle, sometimes of both ventricles. When there is a difficulty in supplying oxygen in sufficient amount to the tissues as the result of a congenital lesion there will be some compensatory change in the heart, manifested as hypertrophy, or in the blood, manifested as polycythaemia. When the compensation is complete, as sometimes happens, there will probably be no symptoms of functional disability. When the compensation is not quite complete, as more commonly happens, there will be a corresponding limitation of the patient's powers owing to functional inefficiency of the heart.

If these views be accepted the indications as to the lines of treatment will be clear. The boy who has no symptoms and who has been leading an ordinary life will be allowed and encouraged to continue doing so. The boy who has found certain limitations to the amount of exercise he can take and strain he can undergo will be advised to keep well within those limits. More especially are competitive struggles with healthy boys to be discouraged. His life race must be run at a slower pace and with a certain time allowance. Record breaking is not for him. If we are guided by the symptomatology in these cases our treatment will probably be much more beneficial to the patient than if we concentrate on the problems presented by the cardiac murmurs.

2. THE ASTHENIC HEART.

I have applied the term "asthenic heart" to a very common condition in adolescence. It is not a disease, but a developmental form of general asthenia which may manifest itself by symptoms ascribed to a weak heart.

My typical example of this condition is that of a boy or girl for whom medical advice is sought because of fainting, or palpitation, or temporary loss of consciousness, or sudden changes in colour—turning white or flushing suddenly—or pain about the precordial region. Alarm has been caused by the presence of one or more of these symptoms, and the home diagnosis has been some form of heart trouble.

Now we have here a serious problem—to say whether a heart is sound or not. All of us can detect well marked disease of the heart with great ease, but when it comes to the decision as to the absence of any disease the problem is much more difficult. One fact may be kept in mind here—that while in advanced life we often find symptoms of organic disease without marked physical changes in the heart, during adolescence we are not likely to meet with serious heart disease which is not evidenced by clearly defined physical changes in the heart. Before dealing with the examination of our patient's heart let us consider the symptoms which have excited alarm.

In adolescent life organic heart disease may or may not be accompanied by symptoms. The symptoms when present are usually definite and traceable to the heart. In patients who are going about they are—shortness of breath on exertion, a disinclination to make the exertions which are a pleasure to healthy companions of their own age, and a feeling of tiredness after moderate exertion. These symptoms are quite compatible with heart disease, and to the medical mind they suggest it. You will note, however, that our type patient here has not been brought because of these symptoms. Faintness and fainting, loss of consciousness, sudden changes of colour, and chest pains—these are not suggestive of heart disease in young people who have been leading an ordinary life. I go farther and say that so far as my own experience goes a history of one or more of these symptoms is prima facie evidence that the boy has not heart disease. You are all familiar with the type of boy or girl who faints at school when standing up. The vasomotor tone is low and the cardiac

tonus is not fully developed. This is the type of case we are dealing with, and the other symptoms are to be similarly explained. So that in dealing with symptoms which have caused alarm in the family circle and led to a diagnosis of heart disease do not be misled, but consider carefully whether the symptoms are really cardiac and whether they cannot be explained as having another origin.

The patient's heart must be examined, and here it must be admitted difficulties often arise and differences of opinion appear. There are certain changes in the heart which some will pronounce to be pathological and which others—including myself—will declare to be within physiological limits. The common changes noted are: (1) an increase of the heart rate; (2) an irregular action of the heart; (3) the presence of dilatation, usually of the left ventricle; (4) the presence of a systolic murmur at the apex.

(1) *Increased Frequency of the Heart Rate.*—While no one will be alarmed by an increase of rate up to 100 beats a minute, when one finds a rate of 120, or 140, or even 160, as I have found it, there is apt to be suspicion as to serious disease. The rapid heart in those cases is, however, the result of nervous disturbance and instability. The owner of the heart which runs off at the rate of 140 will show other evidences of nervous instability, more especially on the sympathetic and emotional side. Endocrinologists would no doubt supply information as to the exact hormone which is wanting or is in excess. You will find that the heart rate varies much from time to time, but when the patient is asleep it is always normal. This does not happen in hearts which are toxic or suffering from active organic disease.

(2) *Irregular Action of the Heart.*—A sinus irregularity of the heart, if the action is slow, is very common and is dependent on respiration. Extra-systoles may occur at times. When there is a combination of these two irregularities—a compound irregularity, as I have called it—the result is rather puzzling to one unaccustomed to the irregularity. It should always be kept in mind that the serious irregularities of the heart beat, such as those associated with auricular fibrillation, auricular flutter, heart-block, etc., are extremely rare during adolescence. On the other hand, the above forms are quite common and can usually be recognized by making the patient hold his breath. During the period of breath-holding the sinus irregularity will disappear entirely, and the extra-systoles will present their characteristic features, which are easily recognized. It may be stated definitely that neither of these irregularities is of any significance or importance, as they occur quite commonly in the absence of any organic disease of the heart.

(3) *Dilatation.*—If a medical man believes that the youthful heart must lie in a certain position and within the prescribed geographical limitations of the textbooks, he will find pathological dilatation common in these patients. Having found it on one occasion he will probably order some months' rest in bed—irrespective of the fact that a little exercise would probably have brought it within his normal standards. If, on the other hand, he recognizes—as is the case—that the youthful heart lies in many different positions, and that the apex is a very variable point, he will not be much concerned at finding the apex beat in the fourth intercostal space and half an inch outside the nipple line. He will examine the patient standing up and lying down; after rest and after exercise; and he will note many changes in the shape of the heart. In the type of case we are dealing with there is no doubt that these physiological variations are strongly marked. The displacement of the apex outwards and to the left is often very striking. Equally striking is the way it may come in again as the result of any strain thrown on the heart, such as a smart run or drawing deep breaths. I cannot help thinking that in such patients full inflation of the lungs has a striking effect in bringing the heart back to "normal" limits. If, on the other hand, one is dealing with dilatation due to organic heart disease, it will be found that the position of the apex does not change in the same way as the result of exercise or full respirations.

(4) *The Presence of a Systolic Murmur.*—A soft systolic murmur is often audible at the apex and may give rise to unwarranted suspicions of heart disease. In this connexion it is well to bear in mind that a slight degree of mitral regurgitation is never the cause of cardiac symptoms in a young person. The murmur, like the dilatation, is subject to great variation from time to time, and under changing conditions of rest and exercise. Both are probably dependent on the atonic condition of the heart. The ventricles are not contracting and the valves are not closing with their usual smartness and efficiency. Hence at times a slight reflux takes place through the mitral valve, and a systolic murmur becomes audible. The important point is that we have no clear evidence here of valvular disease, and systolic murmurs at the apex, apart from definite valvular disease, may be safely ignored in the case of young people.

We have thus failed to find any convincing evidence of the presence of serious heart lesion. At most we have made out signs of cardiac flabbiness and instability—a very different condition from organic disease. If we extend our examination to the rest of the circulatory system we shall probably discover evidences of a lowered vasomotor tone. The extremities are often cold and dusky, and chilblains are commonly present in the winter months. The pulse is soft and weak and of low tension. If we feel it at the wrist with the arm pendent it may appear to be fairly good, but if the hand be raised above the head the pulse falls away or disappears entirely. This is in marked contrast to the pulse in a healthy youth, which maintains its good tone in any position and irrespective of gravity. Functional or postural albuminuria is often present as the result of vasomotor instability.

If we extend our examination of these patients still farther we shall find that it is not only the heart and blood vessels which are asthenic, but that other muscles in the body are lacking in tone. The stomach and intestines are atonic. Splashing is often elicited in the stomach many hours after a meal, due to atonic dilatation. The muscles of the abdominal wall are flabby and atonic. So general are these evidences of muscular weakness that we are led to assume a nervous cause rather than a purely muscular condition. There is as the basis of the varied symptomatology an underlying state of nervous instability and immaturity. Whether time will show that this is also traceable to some endocrine defect or not I cannot say definitely—it is quite possible. But there is no doubt, from the period of life at which the symptoms show themselves, that the condition is largely a developmental one, tending to come on at the age of puberty and to pass off when the patient has reached adult development. In some cases it does not pass off, and if the subject has joined up and been accepted for the army, after a period of strain he will be discharged as suffering from "soldier's heart."

As regards treatment, if the symptoms complained of are not cardiac in origin, and if signs of organic disease of the heart are absent, do not acquire the reputation of being a careful doctor at the expense of the patient's future—by treating him as suffering from a weak heart. If you accept the views given above you will agree that the very worst policy to pursue is to make invalids of these subjects by guarding and treating their hearts. Such a policy has in the past cut short many a promising career. Patients of this type are to be encouraged to lead an active open-air life, and their ordinary routine is only to be regulated so far as to protect the undeveloped powers from undue stress and strain.

3. The Athletic Heart.

A somewhat allied condition is described and known as an "athletic heart." After some more than usually severe game or other exertion a boy has fainted or complained of severe precordial pain. He is said to be suffering from a strained heart. Now I do not wish to deny the possibility of the heart of a healthy boy being strained as the result of exercise, but I do say that I have never met with a case. I have met with many cases in which the heart was said to have been strained, but in all cases some other explanation presented itself. In some cases a damaged heart was present, the result of organic disease, which had been latent as regards symptoms until a breakdown occurred. I recall the case of a young miner who was said to have injured his heart as the result of lifting a heavy piece of coal. He became breathless and suffered from palpitation, and the doctor who examined him found that he had strained his heart. He drew full compensation for this for twelve months, at the end of which time I saw him. There was well marked mitral stenosis with hypertrophy of the right ventricle. By no stretch of imagination can mitral stenosis be induced by physical strain. This young fellow had certainly had rheumatic valvulitis some ten years previously, with the gradual development of stenosis in the mitral valve, but with compensation fully maintained until a severe muscular effort broke it down. This is one type of the so-called strained heart to be met with. In other cases so described I have failed to find any evidence of injury or strain. The diagnosis has been made either on the symptoms described in the last section—

palpitation, faintness, etc.—or in some slight deviation from normal on examination of the heart, such as dilatation, rapid action, etc. Perhaps it is dilatation of the heart that crops up most frequently as the result of this so-called heart strain. Now dilatation of the heart is an evidence not of strength but of weakness. It is never found to occur without some definite cause, such as organic heart disease or severe general illness. But heart strain is said to occur when neither of these conditions is present—in a presumably healthy lad undergoing the ordinary exercises suitable to his age. If you can imagine the Oxford and Cambridge boat crews being set to compete against each other twice a day for weeks on end, you might find that cases of dilatation from cardiac debility appeared. But no one would think of suggesting such a strain—one race a year suffices. In the case of schoolboys, a competition may lead to one entrant falling out exhausted before the race is finished, but he does not strain his heart. Why? Because the heart is very well able to protect itself, makes its own adjustments under conditions of physical stress, and when it has had enough produces in its owner sensations of breathlessness, precordial pain, or exhaustion, which make him pull up. I do not deny the possibility of a healthy youth producing a condition of injurious strain in his own heart, but I think all the chances are very much against it, and I have not so far met with a case. Consequently I do not find that the problems of a strained heart in youth are very difficult of solution.

4. Organic Heart Disease.

It was suggested to me that I might give you an address to-day on cardiac murmurs. Heaven forbid! I hope that none of you has to mourn over years misspent in the unprofitable study of cardiac murmurs, as I have. Who was it who gave the death blow to this futile pursuit? It was James Mackenzie, a general practitioner in Burnley, who evolved the real methods of cardiac examination, discovered many hidden secrets of the cardiac mechanism, and pointed out the lines of further and progressive investigation. Mackenzie has always held that murmurs have to be considered in any examination of the heart, but he has also shown that they do not hold that position of importance which had been accorded them.

For practical purposes we may divide murmurs into two classes: first, those that count, and secondly, those that do not count. This applies very well to the adolescent period of life.

By the term "murmurs which count" I mean those that are indicative of serious valvular disease, and most commonly of lesions which lead to progressive cardiac change and cardiac disability. The murmur in itself is nothing. The questions it raises—Has the underlying lesion produced any changes in the heart? and Are those changes serious and likely to be progressive?—are everything. A murmur is a clue which has to be followed up, if it bears evidence on the face of it that there is something behind. The two chief murmurs falling into this category are the presystolic murmur of mitral stenosis and the diastolic murmur of aortic regurgitation. They claim notice because of their frequency and their importance. During adolescence a presystolic murmur tends to alter and become louder because the initial lesion of childhood, mitral valvulitis, has induced a progressive narrowing of the mitral valve. As the youth grows, the heart should also increase in size, and the mitral valve should become larger. But the process of stenosis which has begun prevents this enlargement of the mitral opening, and thus the work of the right heart is increased. The diastolic murmur of aortic regurgitation is quite common, much commoner than is usually stated and believed. This is because it is easily overlooked unless one is always on the watch for it. Either of these murmurs may be present at this age without any symptoms—that is to say, the patient may be leading an ordinary life and unconscious of any cardiac disability. This is all to the good, but a careful examination of the heart for secondary changes is none the less necessary. It is on the symptoms present and on the secondary changes in the heart that our immediate prognosis and treatment are based, and not on the mere presence of the murmur. These, then, are the two chief murmurs which count. Expressed in other words, it may be said that it is the murmurs which are diastolic in time that count. Compared with these two in frequency, the other murmurs which are of importance, such as an aortic systolic murmur, are so rare as not to call for consideration here.

By the term "murmurs that do not count" I mean the systolic murmurs common at the apex and the base, often suggestive of mitral incompetence or of a lesion of the pulmonary valve; often soft and indeterminate as to whether they are produced inside or outside the heart; and often puzzling as to whether they signify anything or nothing. That is why I call them murmurs that do not count. They are not worth worrying about. However exact the diagnosis, one learns nothing from the murmur as to prognosis, which will be decided by the presence or absence of other changes about the heart, indicative of a valvular lesion.

In the solution of our cardiac problems I think one simple method of examination is too much neglected—namely, palpation. At the age we are considering it is much more applicable than in later years when fat breasts and thick chests make precordial palpation of little use. In adolescents we can make out the cardiac boundaries by palpation and percussion with great accuracy and we can determine definitely the presence of two most important conditions—namely, dilatation and hypertrophy. Personally I learn much more about the condition of the heart from palpation than I do from auscultation. By auscultation one learns what noise a valvular lesion is producing; by palpation one learns what effect the lesion is producing on the heart. Some doctors, beginning with auscultation, receive such a shock on hearing a murmur that they make no further examination. Let me illustrate my point.

A young patient was found to have a heaving apex beat, outside the nipple line, and indicative of hypertrophied action. There was no murmur audible and no evidence of heart disease apart from the hypertrophy of the left ventricle. The radial artery was hard and thickened, and the blood pressure was 160 mm. The urine was of low specific gravity and polyuria was present. Further examination showed the presence of bilateral cystic kidneys, which explained the vascular changes, and the ventricular hypertrophy noted on palpation.

A child suffered from a succession of attacks of precordial pain, cyanosis, rapid heart action, and collapse. These attacks were looked on as cardiac in origin, but on routine examination nothing abnormal was detected. There was a soft systolic murmur audible at the apex and the base but no evidence of valvular disease. Careful palpation showed an area of pulsation at the base of the heart, strong and suggestive of aneurysm, and on percussion the basal dullness was found to extend up to the clavicle. A diagnosis of aneurysm was made—there seemed no other possible diagnosis—and at the autopsy a large aneurysm of the pulmonary artery was found.

Palpation does not always settle cardiac prob'ems, but it may do good in raising them. For instance, suppose that on palpation a definitely hypertrophied action of the left ventricle, with extension outwards of the apex, is felt. It is clearly our duty to search for some cause in the heart or in the circulation for this hypertrophy. If on auscultation a murmur, systolic in time, is heard at the apex, some are content to accept this as a sufficient explanation and to label the case one of mitral incompetence. This may be correct in some cases, but in my experience it is not common in the case of these young people to find mitral regurgitation leading to great hypertrophy of the left ventricle. Before accepting this as a complete explanation I would ask you to examine carefully for two other cardiac lesions. They will not probably both be present, but one or other will serve as a sufficient explanation. The one is aortic regurgitation, manifested by a diastolic murmur, heard either at the apex or along the left side of the sternum. The other is pericardial adhesions, usually between the pericardium and the chest wall, and tying down the ventricle to such an extent that it can only carry on the circulation by hypertrophy and dilatation. Either of those conditions will produce an amount of hypertrophy which is seldom met with in pure mitral regurgitation at this age, and one or other of them is usually present in such cases, although very easily overlooked. In the same way when we find overaction of the right heart, with heaving ensiform, and dullness and pulsation well to the right of the sternum, we must try to find some lesion which will explain this abnormality. It may be the result of mitral regurgitation but it usually is not. The commonest causes here are mitral stenosis or pulmonary stenosis, which should be carefully looked for. You will find that auscultation and palpation are mutually helpful—auscultation in that it leads one to seek for changes in the heart which result from the lesions which produce murmurs; and palpation in that it shows changes in the heart which lead one to seek out the lesions causing them.

Treatment.

The treatment of heart disease during adolescence has certain problems of its own. Perhaps the chief is the prevention of further rheumatic infection. Acquired and chronic

heart disease in early life is the result of acute rheumatic infection—for all practical purposes other causes may be left out. The danger of fresh infection or the recrudescence of latent infection persists as a real one all through adolescence. Sometimes this will take the form of an acute flare-up—acute rheumatic fever; in other cases it will be manifested by slight pains in joints or tendons or muscles, symptoms which do not incapacitate the patient but are unfortunately often accompanied by fresh endocardial and myocardial inflammation. Consequently my own practice is to treat those patients all through adolescent life with sodium salicylate. This need not be given continuously, but for a week or ten days in every month the patient should take from 40 to 60 grains of sodium salicylate daily. This is the best preventive treatment of further infection which I know.

Those patients who have a cardiac lesion but who present no symptoms under the ordinary routine of life had better be left alone so far as any heart treatment is concerned. In giving advice about their future life and work one will naturally select some occupation which does not involve great physical strain.

Those patients who have a cardiac lesion and who find that any extra exertion induces symptoms such as breathlessness had better be advised to observe their own limitations. Games and exercises should be regulated so as not to tire out the patient or produce cyanosis and breathlessness. In selecting a suitable occupation for their adult life it will probably be best for them to take up work of a sedentary nature so that the exercise they take may be independent of their work and not part and parcel of it.

Those patients who have a cardiac lesion accompanied by breathlessness and distress on any exertion do not require to be specially restricted. Nature will teach them to go slow and not to do themselves harm. They have permanently damaged and disabled hearts.

During adolescent life there is less call for direct treatment of the heart than either before or after. This is fortunate, for it spares me the trouble of going into the nature of efficient and direct cardiac treatment. I am afraid I should only have exposed my own want of knowledge of the whole subject of cardiac tonics and my utter scepticism as regards most of them. No one has yet discovered a tonic which will improve the action of a heart which has hypertrophied in order to overcome some permanent difficulty. No one has yet discovered a tonic which will restore that heart when once the muscular power has given out. The more one studies the action of the heart in health and in disease the more one is struck by its wonderful power in accommodating itself to meet the ever-varying calls of the circulation, and in overcoming the difficulties and new problems introduced as the result of disease. Of all the self-regulating mechanisms in the human economy there is none which surpasses the heart in the power of meeting difficulties in health and developing compensatory changes in disease. These inherent powers of producing compensatory changes in the heart, largely through hypertrophy of the cardiac muscle, are specially manifested during adolescence and are not to be relied on to the same extent in adult life.

We can ease the work of a diseased and labouring heart by giving it partial rest. We can remove all physical strain by keeping the patient in bed. We can cut off the sources of nervous disturbance in the brain by sedatives and narcotics. We can deal to some extent with difficulties in the circulation owing to the engorgement of other organs or the presence of oedema and effusion. These things are possible, but when it comes to be a question of direct action on the heart, treatment directed to improve the action of a failing heart, we are apt to discover our therapeutic helplessness.

Yet there is one condition in which the heart is disturbed and its action is impaired, not through the valvular lesion and not through myocardial exhaustion primarily, but as the result of an abnormally rapid rate. The cardiac force, as regards its pumping function, may be sufficient and the compensatory changes may be in working order, but the heart muscle shows signs of failure owing to the rapid rate present. If the heart rate is much increased the resting time of diastole is curtailed, and in the course of time exhaustion of the heart muscle follows. Many rheumatic hearts become disturbed at times during adolescence by the development of this rapid rate, which may be a regular action with a normal rhythm or an irregular action with an abnormal rhythm. In both of these cases it is the rapidity of the heart which is causing the trouble and which is calling for treatment. Under these conditions we can employ digitalis with great confidence, giving full doses for a few days, and we shall often find that when the heart is slowed the patient is much relieved as regards all the signs and symptoms of cardiac failure. I do not say that digitalis will act in all cases. Unfortunately it will not, and we cannot at present tell why it slows the heart in some cases while in others it fails to do so. But it remains as our great sheet-anchor in cases of cardiac failure associated with a rapid action of the ventricles.

Hunterian Lectures

ON

MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,

CONSERVATOR OF THE MUSEUM.

[*Abstracts.*]

LECTURE II.—THE EVOLUTION OF THE ORTHOGRADE SPINE.

THE human spine is a mechanism of the utmost complexity; between the sacrum and the skull are incorporated twenty-four vertebrae, each provided with three short levers—the spinous and transverse processes; each lever is furnished with, not a single muscle, but a group of them. As we pass from sacrum to skull we find the levers change in length, strength, shape, and direction. The muscles, too, which move and balance the levers alter in disposition and strength as we pass from vertebrae to vertebrae. The twelve dorsal vertebrae, besides their three short processes, are provided with very long and powerful levers—the ribs. The student is so apt to concentrate his attention on the respiratory action of the ribs that he forgets that they are the most powerful of the spinal levers. All the muscles attached to ribs—the intercostals, the rectus abdominis, and oblique muscles of the belly wall—are prime movers and balancers of the spine. Here, then, is a very complex team for Nature to drive along a straight evolutionary course. By what process or processes did she succeed in transforming the multitude of spinal levers and muscles, which serve the needs of a pronograde monkey, into the forms which answer to the needs of man? Such a transformation seems highly probable if we suppose that, in the course of its evolution, the human stock has passed through two intermediate stages: (1) a *hylobatian* stage, represented by the small orthograde apes—the gibbons; (2) a *troglodylian* stage, now represented by great anthropoids such as the gorilla or chimpanzee.

THE SACRALIZATION OF BODY SEGMENTS.

With the evolution of the upright or orthograde spine there took place a shortening of the lumbar part of the spinal column, and my first effort will be to show you the means which Nature used to attain this end. In most pronograde monkeys, both of the old world and of the new, the three vertebrae* which become modified in the course of development to form the sacrum are the twenty-seventh, twenty-eighth, and twenty-ninth of the spinal series; Professor Wingate Todd[1] has given reasons for believing that the twenty-seventh vertebra formed the first of the sacral series in the earliest mammals. If one examines a number of monkeys of the same species it will be found that in some the twenty-seventh vertebra, in place of being purely sacral in its characters, shows some admixture of lumbar traits; in others, the twenty-sixth vertebra shows signs of forsaking some of its lumbar traits and adopting the characters of the first sacral. There is a tendency in some for the process of sacralization to spread in a tailward direction; in others in a headward direction. In small orthograde apes, represented by the gibbons, sacralization has spread headwards, so that the twenty-sixth now forms the first of the sacral series. In this manner a lumbar vertebra has been added to the sacrum of gibbons, giving them four sacral vertebrae in place of the pronograde three, but reducing their lumbar

* See a paper I contributed to the *Journal of Anatomy and Physiology*, 1902, vol. 37, p. 18.

vertebrae to six in place of seven — the primitive number. The incidence of sacralization amongst gibbons is much less stable than among pronograde monkeys. In fully 15 per cent. of animals the process has spread headwards, so that the twenty-fifth vertebra shows some or all of the characters of a first sacral; over 5 per cent. of animals show a tendency in an opposite or tailward direction. Amongst the great anthropoids the process of sacralization has spread still farther in a headward direction. In the majority of chimpanzees the twenty-fifth has become the first sacral, but amongst orangs—an anthropoid type in which the lower limbs have undergone retrograde changes—the twenty-fourth vertebra (fifth lumbar) forms the first of the sacral series. In man, as in the chimpanzee and gorilla, the twenty-fifth forms the first of the sacral series; but in man the formula[2] is more stable than among the large anthropoids. In a series of one hundred human skeletons it will be found that some three or four will show a headward sacralization, while six or eight will show a tailward movement. The evolution of the plantigrade posture has necessitated a lengthening of the loins in man—the tendency of sacralization in him seems to be in a tailward direction.

Shifting of Limb Buds.

Now the developmental process which transforms a last lumbar into a first sacral vertebra is not one which works only on bones; all the elements which lie in the same segment of the embryonic body—nerve, muscle, and vessel—undergo a transmutation corresponding to that of the vertebra. With a headward sacralization there is also a forward movement of the sacral and lumbar plexuses, although the forward shift of the nerves lags slightly behind that of the vertebrae. In point of segmental origin the buds which form the lower limbs also move forwards; so also must the centres in the spinal cord which regulate the nerve mechanisms of the lower part of the body. We cannot conceive that the process of segmental differentiation which fashions the hinder body segments of ape and of man can be influenced by any intrinsic or extrinsic agent acting on the completely developed body. The evolutionary machinery which shapes new forms has to be sought for, not in the acquired habits of the living animal, as Lamarck supposed, but in the factors which control the development of embryonic tissues, and that evolutionary machinery works in such a way as to produce new *functional* possibilities.

Transmutation of Dorsal and of Cervical Segments.

In fashioning the lumbar region of man and of the higher primates the process of transmutation has also been at work, but to a less extent, in the body segments at the upper or dorsal end of the lumbar series. In the majority of pronograde monkeys there are thirteen pairs of ribs; the last rib-bearing vertebra is the twentieth. With the evolution of the orthograde posture in the small anthropoids the twentieth vertebra was still the last rib-bearer. In the most generalized surviving member of the great anthropoid group—the chimpanzee—the twentieth vertebra is usually the last rib-bearer; in the gorilla it is often the twenty-first; while in the orang, although it is usual to find the last rib attached to the nineteenth vertebra, yet it is not uncommon to find the process of costalization ending at the eighteenth. If we take a hundred human skeletons we shall find about two in which the eighteenth vertebra is the bearer of the last rib, ninety in which it is the nineteenth, and eight in which it is the twentieth. There can be little doubt that man's immediate ancestry had thirteen pairs of ribs; in every human embryo a vestige of the thirteenth pair appears, which subsequently becomes fused with the adjoining transverse process. The diaphragm is attached to the transverse processes of the first lumbar vertebra, representing the origin from the thirteenth pair of ribs, which is to be seen in nearly all apes. A tendency to the transmutation of the last cervical into a first dorsal or a first dorsal into a last cervical is to be recognized both in man and apes. But in apes, as in men, it is much commoner to see the last cervical vertebra assuming dorsal characters than the first dorsal assuming cervical characters. The tendency of the dorso-cervical movement, which is slight, is in a headward direction. There is no reason to suppose that in the evolution of the higher primates there has been an intercalation of new segments at any point of the vertebral series; segments have been shed, but always it is the hindmost segments of the body which disappear.

Why the Loins were Shortened.

What, then, is the functional significance of the shortening of the lumbar region which has taken place with the evolution of the orthograde posture? Why should this region be again elongated and strengthened when the human body became adapted to the plantigrade posture? In pronograde monkeys of the old world the lumbar part forms from 40 to 45 per cent. of the presacral spine; in small orthograde apes the lumbar region varies from 30 to 34 per cent. of the spine. I have already drawn attention to the fact that pronograde apes gain their forward impetus in leaping from their hind limbs; in the act of springing the thoracic part of their bodies is raised by extension of the loins; the lumbar part of their spine serves as a flexible lever for moving the upper part of their body on the fixed pelvic base. In the orthograde gibbon the lumbar region serves quite a different purpose. As the arms are the main organs of progression the lumbar part of the spine serves chiefly as a flexible lever for attaching the pelvis and lower limbs to the body; in its forward flight branches are seized by the feet for support and thus the weight of the body does come to rest temporarily on the lower limbs of the moving gibbon. Its lumbar spine serves alternately as a suspending and a supporting lever. The change from the pronograde to the orthograde posture was attended by a shortening of the lumbar region, brought about by the sacralization of the twenty-sixth body segment. There was at the same time an enormous saving in muscular expenditure. This will be evident when I lay the following observation, made on healthy jungle animals, before you. In a pronograde monkey I found that the muscles employed in extending the spine—the erector spinae group—weighed 93.5 grams, while in the orthograde gibbon, although the weight of its body was rather more than that of the monkey, the erector spinae group weighed only 44.2 grams—less than half the weight of the pronograde musculature.

The Lumbar Curve.

With the evolution of the great anthropoid type the lumbar region of the spine became still shorter and stronger. In the chimpanzee the lumbar part, on an average, forms 27 per cent. of the presacral spine; in the orang only 24 per cent.; in the gorilla rather more—namely, 29 per cent. In none of the great anthropoids is the whole weight of the upper parts of their bodies transmitted through the lumbar region of the spine except momentarily. In its climbing movements the chimpanzee makes an equal use of its upper and lower limbs in supporting its weight; in the orangs the upper extremities are the predominant supporting—or rather suspending—organs for its natural arboreal progression; in gorillas the lower extremities are more specialized than the upper for purposes of support and movement. With the evolution of the human or plantigrade posture the lumbar region of the spine became further modified and strengthened to form a flexible lever on which the whole weight of the upper part of the body is poised. An easy and graceful carriage of the human body requires long loins. At birth the lumbar region measures 27 per cent. of the presacral spine—the same proportion as in the chimpanzee. Elongation takes place rapidly as a child learns to walk; in the average adult the lumbar region comes to form about 32 per cent. of the total length of the spine. Indeed, it is not too much to say that the spine of the human baby, as regards the proportions of its parts and its curvatures, is in an anthropoid or troglodytian phase of evolution. We have only to watch an infant trying to support its body erect when learning to walk to see reproduced the orthograde posture of a great anthropoid ape. The lower limbs are seen to be imperfectly extended, the body plainly inclines forwards, and the arms stretch out to clutch at neighbouring objects for support. In the second year of life, growth changes in the lumbar vertebrae make further extension of the body a permanent possibility; it is then that the loins elongate and the lumbar curve, seen only in the human species, makes its appearance.

Alterations in the Musculature.

When we compare the spinal musculature of a pronograde monkey with that of the various orthograde forms, including man, we are struck by the simple nature of the structural modifications which have served to adapt the pronograde system of muscles to orthograde purposes. Not a single new muscle has been introduced; everywhere we meet with the same series of vertebral levers and the same groups of muscles acting on them. The brunt of the evolutionary or

adaptational changes has fallen on the spinal musculature of the lumbar region. True it is that certain changes take place in the muscles which extend the dorsal part of the spine, but the moulding of the dorsal region has more to do with respiratory purposes than for the mere support of the body in an upright posture. The musculature of the cervical region also undergoes certain changes with the evolution of the orthograde forms, but the chief transformations seen in this region of the spine do not depend on postural adaptations, but on jaw and tooth development. The neck is the movable lever of the head; if there are massive jaws and great teeth then must the skull be widely hafted to a strong and thick neck. There is a growth mechanism which correlates the development of neck and jaws.

Establishment of a Pelvic Base.

We turn, then, to note the chief changes which have taken place in the spinal musculature of the loins of higher primates; they provide a series which lead from the condition seen in pronograde monkeys to that seen in orthograde, plantigrade man. As we pass along the series we note that the spinal musculature obtains an ever-increasing attachment to the sacrum and to the pelvis; the pelvis becomes more and more a fixed base from which the erector spinae may act. The steps which led up to the great pelvic base of man were the following: (1) With, or before, the assumption of the orthograde posture, the tail as a free external organ completely disappeared; in every member of the orthograde the tail vertebrae have become submerged and coccygealized. The disappearance of the extensors of the tail leaves the dorsal surface of the sacrum free for the use of the erectors of the spine. (2) The sacralization of the seventh and then of the sixth lumbar vertebra extends and strengthens the area for spinal fixation. (3) An enormous extension of the iliac crests, particularly in a dorsal direction, gives an increased base for fixation of spinal muscles. The dorsal extension of the iliac crests reaches its climax in the human pelvis. In the gibbon the ilium and its crest are shaped much as in monkeys; the transformation has become marked in the great anthropoids, the gorilla showing the nearest approach to man in the development of its iliac crests. (4) In man the area for muscular origin is also increased by the backward tilting of the sacrum, so that its dorsal surface in the erect position looks upwards as well as backwards.

Spondylolisthesis.

This oblique, in many individuals almost horizontal, position of the human sacrum deserves our particular attention. Everyone must have observed how variable is the depth of the curvature of the loins; in some individuals the sacral aspect of the pelvis forms almost a horizontal shelf. In certain races, particularly negro and negroid, the loins are straight; the sacrum seems to almost continue the line of the lumbar spine; in other races, particularly in Europeans and more in women than in men, the sacrum forms almost a right angle to the lumbar spine. The spine, transmitting the weight of the suprapelvic part of the body, is poised on the anterior or basal end of the sacrum. The weight tends to tilt up the hinder or coccygeal end of the sacrum, and would do so were it not for (1) the form and strength of the sacro-iliac joints, (2) because the hinder end of the sacrum is bound to the ischial tuberosities by those particularly strong stays, the sacro-sciatic ligaments. There is also a tendency, when the sacrum is set obliquely, for the basal end of the spine to be dislocated forwards into the pelvis, giving rise to the condition known as spondylolisthesis. Such a dislocation is prevented by the articular processes of the last lumbar vertebrae being locked within those of the sacrum. A sudden jump, or severe effort to lift or carry a heavy weight, may cause the laminar arch of the last lumbar vertebra to snap and thus permit a forward displacement of the spine. I know of no evidence which leads me to suppose that the separation of the arch of the last lumbar vertebra is the result of maldevelopment.

Adaptations for Lateral Balance.

We have been discussing the evolutionary changes seen in the sacrum and pelvis of apes and men—changes which were required to give a more extensive and firmer base from which the erector muscles could act. We note that the pelvic base becomes wider. The reason for this is quite clear. The spine of a pronograde monkey, if converted to serve the needs of the orthograde posture, will require special adaptations, not only for extension and flexion, but also for lateral movements and balance. As the ribs are by far the most powerful lateral levers, it was by a modification of them, and of the muscles acting on them, that lateral balance in the orthograde posture was secured. The thorax was transformed in shape, not for respiratory but for postural purposes. Every costal arc is made up of three segments—a dorsal, to which the spinal muscles are attached; a lateral, which is acted on by the intercostals and oblique muscles of the belly wall; a ventral or anterior segment, to which the rectus abdominis is inserted. Every muscle attached to a rib is also a spinal balancer. With the evolution of the orthograde posture one notes that the dorsal segments of the ribs became increased in length, thus giving the spinal muscles a greater lateral purchase on the spine. Further, they became set farther back—more on the plane of the tips of the spinous processes—thus giving the muscles attached to the dorsal segments of the ribs a greater power in extending the spine and keeping it erect. Thus, in the orthograde types the bodies of the dorsal vertebrae have the appearance of being pushed farther within the cavity of the thorax than in pronograde types.

The Orthograde Adaptations seen in Spinal Muscles.

In the course of a single lecture it is impossible to give a detailed account of all the changes which are seen to take place in the spinal musculature with the evolution of the orthograde posture. But I may cite one or two instances to illustrate the manner in which evolutionary changes are effected. The quadratus lumborum of man is a lateral balancer of the spine. It rises from the iliac crest and is attached to the transverse processes of the lumbar vertebrae and to the last rib; some of the fibres to the last rib rise from the transverse processes. The quadratus of the great anthropoid apes is similar in form and action to that of man. In pronograde apes this muscle forms a series of fasciculi acting on the transverse processes of the loins; the hindermost of these springs from the iliac crest; the most anterior end on the last one or two ribs. The fasciculi adjust the lumbar vertebrae by acting on their transverse levers. The quadratus of the gibbon is, as regards form and action, intermediate to the stages seen in monkeys and great anthropoids. Evolution has proceeded by combining a series of independent fasciculi, acting individually, to form a single muscle which acts on a region of the spine rather than o. individual vertebrae.

The changes which came over the deepest layer of the spinal musculature—particularly in the muscle known in human anatomy as the multifidus spinae—were of a similar nature. In the great anthropoids we find the spinalis dorsi assuming the form seen in man. With the evolution of the orthograde posture not a single new muscle was introduced in the spinal series; yet all became modified, some to a slight extent and some to a great extent. But in all cases the machinery of evolution is the same; it consists of partial or complete migration of muscular attachments; a fusion or separation of fasciculi; under- or over-development of the various constituent parts of a muscle.

The Complexity of the Physiological Problem.

It is when we concentrate our attention, not on the anatomy but on the physiology of the spinal musculature that we realize the complexity of the problem implied by the evolution of the orthograde posture. In pronograde mammals, be they four-footed or four-handed, each vertebra has to be adjusted by muscular action so long as the animal sits, walks, or stands. In orthograde primates each vertebra has to be balanced on another, so long as the erect or semi-erect position is maintained. Their thick intervertebral discs make balance more delicate. A little sum in arithmetic will help us to understand what a living vertebral balance means. In the spine of the commoner kinds of monkeys there are twenty-six vertebrae; each is provided with three short levers; thirteen of them have in addition the long and powerful costal levers—104 levers all told. On an average four muscles act on each lever—416 muscles in all. From each of these muscles constant streams of impulses are passing into the nerve centres of the cord and equally constant streams are emerging to maintain the postural tone and actions of the muscles. Besides these streams of afferent and efferent impulses there are the equally extensive higher streams flowing to and from the postural centres of the mid-brain and the timing mechanisms in the cerebellum and bulb. The nerve centres of the spinal cord, mid-brain, and hind brain of a monkey are organized to carry out the reflexes necessary for a pronograde posture. It is habitual for monkeys of all kinds to assume a sitting or semi-erect posture when

resting; to maintain this attitude the nerve mechanisms must have in them a nucleus which may have been expanded into that elaborate mechanism which serves the needs of orthograde apes.

Scoliosis.

In none of the orthograde forms is such a continuous and urgent demand made on the postural spinal mechanism as is the case in man. In man only is the whole weight of the suprasacral part of the body supported erect on the spine over long intervals. The demand on this neuro-muscular postural mechanism is, I think, even greater in the sitting than in the standing posture, particularly if we sit leaning forwards in writing and reading. Sitting bolt upright is particularly exhausting, more especially for young people in whom growth of vertebrae and of spinal muscles is proceeding apace. The muscles which act on the short levers of the spine yield first, while the muscles which act on the long costal levers can still keep on. We rest these exhausted short spinal muscles by allowing the vertebrae to rotate until the articular processes begin to lock and the transverse processes rest upon the necks of the long costal levers. Herein lies the beginning of lateral curvature or scoliosis. If the habit becomes fixed, then come the deformities of chest, vertebrae, and spine with which orthopaedic surgeons are only too familiar. It is not true, however, to say that our spines are not perfectly adapted to the upright posture; it would be more accurate to say that human spines were not evolved to withstand the monotonous and trying postures entailed by modern education and by many modern industries.

References.

[1] T. Wingate Todd: *Anat. Record*, 1923, vol. 24, p. 251. [2] See Wingate Todd, loc. cit.; A. Keith: *Journ. of Anat.*, 1902, vol. 37, p. 18.

The Goulstonian Lectures

ON

THE NATURE OF ARTERIO-SCLEROSIS.

Delivered before the Royal College of Physicians of London

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Lecture II.—THE INTRINSIC PROCESS IN ARTERIO-SCLEROSIS.*

The histology and distribution of diffuse hyperplastic sclerosis formed the subject of the last lecture. The nature of the process concerned in the development of the lesion is the next aspect of its pathology to be considered. From a theoretical standpoint one or more of four cardinal processes are involved—namely, Involution, Growth, Inflammation, and Degeneration. The subject is a difficult one to present concisely, and if it is dealt with from an abstract point of view its presentation is liable to be either too dogmatic or ambiguous; hence I have chosen a chief advocate for each theory, and will discuss the theory on the basis of the argument and facts brought forward to support it.

Physiological Processes.

(*a*) *The Process of Involution.*

Thoma's[1] view of arterio-sclerosis was based on the observation of the changes that take place in the aorta at birth on the interruption of the placental circulation. He observed an intimal thickening of the aorta between the origin of the ductus arteriosus and the origin of the umbilical arteries, due to cellular proliferation and new formation of connective tissue in the subendothelial layer, and, as Jores showed later, due also to the formation of elastic tissue in this layer. Thoma compared this change to the intimal thickening found in ligatured arteries and in the obliterated hypogastric arteries of infants, and he attributed it to a slowing of the blood stream. He applied this theory to the development of arterio-sclerosis. Thus, in the case of nodular sclerosis, he held that the intimal thickening was secondary to weakening of the media, as a result of which bulging of the vessel wall occurred, with consequent slowing of the blood stream at the site of bulging. In the case of diffuse arterio-sclerosis not due to initial weakening of the media he presumed a destruction of capillary fields by disease, and argued that as a result of reduction in the size of the vascular bed a slowing of the blood stream occurred in the vessels supplying the affected area. The theory involves the assumption that an artery may fail to adapt its lumen to the amount of blood flowing through it by contraction of the media, and that the necessary narrowing of the lumen is completed by thickening of the intima.

It is generally agreed that as a basic explanation of the development of arterio-sclerosis Thoma's theory does not not hold good. Thus, as Fuchs pointed out, there is no evidence of a failure on the part of the aorta to equalize by muscular contraction the size of its lumen to the decreased quantity of blood flowing through it after cessation of the placental circulation. Further, it is inconceivable that in a system such as the cardio-vascular, which adapts itself so rapidly to changes in the distribution and quantity of blood content, a single alteration in these conditions could be responsible for intimal thickening which gradually increases over a period of years. Thoma's premisses were also shown to be incorrect by the fact that the intimal changes in the aorta are not limited to the length of the vessel between the ductus arteriosus and the origin of the umbilical arteries. Jores raised objection to the theory on histological grounds; he emphasized the fact that the intimal thickening in involution is of the connective tissue or regenerative type, whereas in arterio-sclerosis it is of the hyperplastic type—a distinction based on the different form of elastic fibres in the two conditions. Marchand also attacked the theory on histological grounds, and pointed out the absence of fatty degeneration in arterial involution in contrast to its constant presence in arterio-sclerosis. The same fact has come to my notice in studying the changes that take place in involution of the ductus arteriosus and hypogastric arteries of infants. There seemed to be an exception to the rule that fatty degeneration does not occur in arterial involution in the reported presence of fatty degeneration in uterine arteries undergoing normal involution, but, as I have shown elsewhere,[2] the work which led to this opinion was based on the examination of pathological material, and the fatty change observed in the specimens examined was due to disease elsewhere and was not a part of the process of normal uterine involution.

Though Thoma's theory fails in providing a basic explanation of arterio-sclerosis, it probably holds good in so far as it includes the idea of replacement fibrosis. For instance, in the case of nodular sclerosis, if the primary lesion is in the intima Thoma's theory has no application, but if the initial lesion is in the media it may well be that the intimal proliferation occurring as a secondary event is compensatory. Thoma attempted to prove that the initial change was a weakening of the media by injecting arteries affected by nodular sclerosis with melted wax equivalent to the blood pressure during life, then allowing the wax to set and cutting sections of the artery. He claimed that the nodules disappeared and the lumen of the artery so distended had a normal cylindrical form. These experiments have been repeated by Klotz,[3] who used water instead of wax, and cut the vessel frozen; he failed to confirm Thoma's results. Thoma also attempted to demonstrate the primary weakening of the media by injection of the vasa vasorum of the larger vessels, and he showed that a greater penetration of the media by vasa vasorum occurred at certain points where there was no intimal thickening, and since this increase in vessels in the media was found in patches of nodular sclerosis he argued that the new formation of vessels showed a damage to the media as a primary event preceding the intimal proliferation. My own view of the matter is that Thoma's view of arterio-sclerosis holds good to the limited extent that it involves the idea of a replacement fibrosis. To this extent it is in keeping with the inflammatory theory of arterio-sclerosis, and it is of this further value—that it brings out the fact that degenerative changes are a primary event in one form at least of arterio-sclerosis. Yet even when the degenerative changes are primary it cannot be assumed that the intimal proliferation is necessarily of the nature of a replacement fibrosis, since the proliferation may be a direct response to the insult that is simultaneously responsible for the medial degeneration. Thus Thoma's theory is merely an adjunct to any basic explanation of the production of the lesion in arterio-sclerosis.

* Abstract of lecture delivered on March 8th.

(b) The Process of Growth.

Jores's[4] views on the production of arterio-sclerosis may be discussed in terms of the physiological process "growth." He finds the basic explanation of the lesion in arterio-sclerosis in the intimal changes that normally occur in the aorta in the process of growth, and he expresses the opinion that "an increased functional demand on the vessel wall is a necessary factor for the development of arterio-sclerosis." He also says: "The hypertrophy of certain layers of the vessel wall and their subsequent degeneration is the essential feature of arterio-sclerosis." A distinction is drawn between this process and the process of inflammation in these words:

"In direct contrast to the thesis already advanced I regard the connective tissue thickenings of the intima as secondary events, reactions and compensatory endeavours on the part of the vessel wall, which are on a par with the phenomena of repair after injury and defect, regeneration, and scar formation processes of inflammatory reaction."

He sums up with the words:

"The development of arterio-sclerosis does not depend on these; they arise from quite other causes and do not lead to true arterio-sclerosis."

Jores bases the distinction between the hyperplastic and fibrotic layers of the intima on a study of the changes in structure of the intima of the aorta during the natural process of its growth. In the aorta in the first year of life he describes a layer on the inner side of the media consisting of two lamellae of elastic tissue lying close together; cells of variable form, in the main elongated, lie between these two lamellae. Comparing this with the aorta at the age of 13 years the same layer is seen, and now wider; the two lamellae are stronger and between them lies a fine network of elastic fibrils, while the nuclei previously seen between the two elastic lamellae have, in the majority, an obvious morphological identity with muscle cells. This is the musculo-elastic layer. It increases in thickness with growth, and though there are variations in its development the variation is within narrower limits than is the variation in thickness of the rest of the intima. At the age of 20 years the musculo-elastic layer is increased both in the thickness of its lamellae and by the splitting off of two further layers of elastic tissue from the original inner lamella. The splitting off of elastic tissue layers from the original lamellae in the precess of growth of the aorta is directly compared with the same process which Jores describes as occurring in the small arteries in arterio-sclerosis. It is in this comparison of the development of the musculo-elastic layer of the aorta with the development of new lamellae of elastic tissue in small arterio-sclerotic vessels and the parallel development of the changes in the two conditions, the one of growth and the other of disease, that Jores discovers the underlying process in arterio-sclerosis.

There is, however, a difficulty in maintaining the distinction between hyperplastic intimal thickening of arterio-sclerosis and the connective tissue or regenerative thickening in the intima that is found in inflammation of arteries—a difficulty which Jores himself appreciated. The two types of intimal thickening always occur together, except in normal growth of the aorta, and as a matter of fact Jores's hyperplastic layer is often found in pure inflammatory states. [Specimens of syphilitic and tuberculous endarteritis with well formed hyperplastic intimal thickening were shown.]

A more serious criticism of Jores's views is directed against his theory of the formation of elastic tissue. He suggests that the laminae of elastic tissue in the hyperplastic layer of arterio-sclerotic vessels develop by a process of swelling and splitting of the internal elastic lamina, as distinct from the process by which elastic fibres are formed in the connective tissue or regenerative layer of the intima. Since, however, elastic fibres have no nuclei, and presumably no independent activity, the idea that an elastic lamina can grow in thickness, split and throw out thread-like branches into neighbouring tissues, is contrary to the accepted canons of biology. The present view of the formation of elastic tissue is that it is laid down by connective tissue cells or by endothelium, and, like other intercellular material, it is living but inert. Little, however, is known of the conditions that govern its formation and form, and it is an interesting speculation to draw an analogy between the formation of concentric laminae of elastic tissue in the thickened intima of sclerotic vessels and the Liesegang phenomenon,[5] in which banded precipitates are formed in gelatin solutions. Bradford[6] has shown the fundamental rôle of adsorption in the formation of these stratified layers, and though the physico-chemical factors concerned in their formation are not yet accurately known, the influence of the surface area of the precipitated salt, the concentration of the solute and solid, the reaction of the gel and other factors have been closely studied, and may ultimately throw light on the formation of elastic tissue in arterio-sclerosis. It is evident, therefore, that Jores's theory is based on a wrong principle, and I do not think that his observations provide evidence on the proposition that arterio-sclerosis is a result of an increased functional demand made on the vessel wall.

INTRINSIC PATHOLOGICAL PROCESSES.

The two theories of arterio-sclerosis that are more directly based on the pathological processes of inflammation and degeneration remain for consideration. The latter will be taken first, since of the four theories of arterio-sclerosis it is the most generally accepted.

(c) The Process of Degeneration.

Marchand[7] is chosen to represent this theory, as he has so far made it his own as to suggest the word "athero-sclerosis" in place of "arterio-sclerosis." Thus he states that there can be no doubt that degeneration is the main feature of arterio-sclerosis. He finds that the degeneration begins (*simultaneously with proliferation of the intimal cells*) in the deeper layers of the intima; and that the occurrence of "primary" fatty or atheromatous degeneration is so closely associated with sclerotic processes that the term "arterio-sclerosis" is not sufficiently comprehensive for the whole disease. Thoma's theory of arterio-sclerosis postulated a weakening of the vessel wall with resulting loss in its elasticity and widening of its lumen as the initial fact that determined a slowing of the blood stream. He did not, however, accept the necessity of demonstrable pathological changes in the weakened media, and inclined to the view that the more obvious degenerative changes were secondary to those anatomical changes to which he attached most importance—namely, the involutionary changes previously discussed. Marchand controverts him on this matter, and says that Thoma attached too little importance to the essential degenerative character of the processes involved. The difficulty in fatty degeneration, which the difference in the opinions of Thoma and Marchand illustrates, is as to whether it is primary or secondary; whether in fact, as Virchow pointed out, its appearance is the first sign of disturbance of tissue structure, or whether it only comes after other evidence of disturbance is visible. Marchand's views are endorsed by Andrewes, who has written, under the title of "Arterial Degeneration," "there can be no doubt that the primary histological change is a degenerative one affecting the muscular and elastic tissues."

In the case of diffuse hyperplastic sclerosis the specimens I have shown demonstrate equally beyond doubt that the primary histological change in the arterioles is proliferative and not degenerative. The interpretation of the changes seen in the parent vessels of the arterioles will depend on the significance attached to hyaline substance in their walls. I have adopted the presence of fat as my criterion of degenerative change and do not regard the presence of hyaline substance in the inner layer of the intima in these vessels as critical evidence of degeneration (Lecture I), and in this interpretation I am, I think, supported by Jores. In addition to the reasons already given for this view, it is a striking fact that the anatomical changes progress to marked extent without the appearance of fatty degeneration—in fact, fat is characteristically absent in the intima of these vessels. Hence I maintain that the lesions of diffuse hyperplastic sclerosis are primarily proliferative, and at the same time they share with other forms of arterio-sclerosis the stigma of fatty degeneration in some part of the lesion. This degenerative change is, however, secondary.

These contradictory views as to the nature of the initial lesion of arterio-sclerosis depend on the type of artery and the form of arterio-sclerosis studied, and the stage in the disease process at which the observation is made. Thus, in the case of diffuse hyperplastic sclerosis, it is only by the demonstration of the endothelial proliferation in the earliest phase of the lesion that the priority of proliferation over degeneration has been established. Klotz, on the other hand, has identified a form of arterial lesion occurring in older subjects in which fatty degeneration of the media is the primary event. This type of arterial disease will be referred to later, and in the present connexion it illustrates the fact that all forms of chronic arterial disease do not start in the same way.

(d) The Process of Inflammation.

Virchow's opinion[8] is best stated in his own words:

"In this matter I have no hesitation in completely accepting the old view and in attributing the origin of the so-called atheromatous degeneration to an inflammation of the vessel wall, and I have taken pains to show that this kind of inflammatory disease of the vessel wall is in fact exactly the same as the condition of the heart wall commonly called endocarditis. There is no other difference between these two processes than that endocarditis more often runs an acute course, and endo-arteritis more often runs a chronic course."

This is the view of arterio-sclerosis to which my own observations have led me, with this reservation—that there is at any rate one form of chronic arterial disease that begins as a primary degeneration of the media.[3] I have no doubt that Virchow's theory holds good for diffuse hyperplastic sclerosis, and before resuming the evidence in support of this theory it is necessary to refer to two objections that have been urged against it.

In the first place it has been urged, particularly by Jores, that the histology of diffuse hyperplastic sclerosis is different from that of lesions which are without doubt inflammatory. The difficulty of this distinction has already been alluded to, and sections of arterial lesions that are without doubt inflammatory and in which the so-called hyperplastic layer is present have been shown. Neither is it possible to make a hard and fast distinction between arterial inflammation and arterio-sclerosis on the absence of fatty degeneration in the former and its presence in the latter, since fatty degeneration may occur at a later stage in these lesions. Warthin[9] has pointed out the difficulty of distinguishing between syphilis and arterio-sclerosis of the aorta, and says that in the later stages these lesions can only be differentiated by the specific lesion of syphilis that he describes. In short, the comparison of the lesion of diffuse hyperplastic sclerosis with tuberculous and syphilitic endarteritis both controverts Jores's distinction between the two forms of elastic tissue formation and at the same time provides additional evidence for the inflammatory nature of arterio-sclerosis.

In the second place, it has been urged against the inflammatory theory of arterio-sclerosis that the ordinary signs of inflammation are absent; in the early stages of the lesion there is no small cell infiltration and no dilatation of the vasa vasorum. The absence of these changes in the early phases of the lesion is the important matter: their appearance later is characteristic, and due to tissue reaction to products of degeneration and necrosis. Thus Bergel[10] has shown that lymphocytic infiltration results from the presence of fatty degeneration in any tissue, and among other illustrations of this fact he quotes the well known small cell infiltration in arterio-sclerosis. Sir Bernard Spilsbury has drawn my attention to polymorphonuclear infiltration provoked by tissue necrosis. In addition to infiltration with lymphocytes, polymorphonuclear cells, and fibroblasts, there is a permeation of the media and even of the thickened intima with capillaries and occasionally very small arteries in well marked arterio-sclerotic lesions. These inflammatory lesions are secondary, and throw no light on the nature of the initial process.

Many authors, including Virchow and Andrewes, have called attention to the fact that arteries are relatively avascular structures, and this fact is in part responsible for the absence of the usual signs of inflammation. Thus, according to Koelliker,[11] all the larger vessels from 1 mm. diameter and over possess nutrient vessels which are distributed predominantly in the adventitia, in which they form a rich round-meshed capillary network, and the general consensus of opinion agrees that the tunica media of only the larger arteries and veins possesses nutrient vessels, and that these are supplied only to its outer layers; in fact, the middle and inner layers of the media and the whole of the intima are avascular structures. Inflammation of the intima may, therefore, be compared with inflammation of the cornea. Senftleben[12] showed that a minimal injury to the cornea causes local destruction of the corneal cells and the appearance of a surrounding zone in which the corneal cells appear enlarged, distinct, and tumefied. The process may continue and advance insensibly to repair without the intervention of leucocytes, the hypertrophying cells of the granular zone eventually undergoing karyokinesis, and thus by multiplication replacing the cells destroyed. A more severe injury provokes the accumulation of wandering tissue cells in its neighbourhood, still without evidence of dilatation of neighbouring vessels, or diapedesis through their walls. The absence of a *primary* proliferation of fixed tissue cells in keratitis and the proliferation of endothelial cells in arterio-sclerosis has no other significance than the emphasis it lays on the inflammatory process in diffuse hyperplastic sclerosis. The difference in the lesion in the two conditions may be due to the irritant acting once and for a short time in experimental keratitis, in comparison with its possibly prolonged action in arterio-sclerosis, or it may be due to the fact that whereas the corneal cells lie in an avascular medium, the endothelium, as distinct from the rest of the intima, is in a vascular medium with an abundant oxygen supply.

This distinction between the endothelium and the intima is highly important, and is supported by Grünstein,[13] who has published one of the best accounts of the normal structure of the larger arteries and their variation with age, and who expresses the opinion that "*the endothelium does not belong to the intima, but forms an independent constituent of the arterial wall.*"

If this is true in fact it becomes obvious that we are dealing with inflammation in a quite peculiar structure when we consider inflammation in an arterial wall. It is a structure which is vascular in its outer layer, avascular in part of its middle and all its inner layer, and it is lined by a layer of cells which belong rather to the blood than to the vessel whose structure it is their function to form, and perhaps in pathological conditions to keep in repair.

The importance of the blood supply in determining the type of tissue changes, whether they are of an inflammatory or degenerative type, has recently been brought out in the study by Mr. A. G. Timbrell Fisher of the pathology of osteo-arthritis.[14] He finds that the lesions are degenerative or proliferative according to the proximity of an adequate blood supply: thus in the articular surface of the knee-joint the initial lesion is a degeneration of the intercellular matrix in the central area of the cartilage—an area which is completely avascular—whereas the peripheral lesion is proliferative, due (he thinks) to the presence of an adequate blood supply from the *circulus articuli vasculosus* of William Hunter. These changes are to be compared with degenerative lesions in the depth of the intima in the larger arteries often appearing first in the internal elastic lamina, and with the proliferation of the endothelium already demonstrated in diffuse hyperplastic sclerosis, and perhaps also occurring in nodular sclerosis, as will be shown later when reference is made to the work of Klotz.[18]

All that is known about the function of endothelium supports the view that its proliferation in diffuse hyperplastic sclerosis is evidence of the inflammatory nature of the lesion. Thus endothelial cells have been shown to take up bacilli within ten minutes of their inoculation into the circulation.[15] Behring and Mutch[16] have called attention to the great phagocytic powers of the endocardial endothelium. In typhoid fever the endothelial cells of the spleen swell, proliferate, and become separated. There is general agreement that the large mononuclear cells of the blood have their origin from endothelial cells of capillary walls, and Baumgarten has shown that vascular endothelium under mild grades of irritation gives rise to fibroblasts and connective tissue. Adami[16] sums up by saying:

"We have, indeed, to recognize the very active part played by vascular endothelium in inflammation, its pronounced proliferative and phagocytic powers . . . microscopically these cells can be seen to alter during the inflammatory process; they become enlarged and project into the lumen of the smaller vessels, and in my experience this enlargement affects not only the cell bodies but also the nuclei, which at the same time would seem to contain more chromatin and to stain more intensely. In cases of chronic inflammation the enlargement is seen followed by proliferation, notably in the arterioles and capillaries, a process which may lead to the ultimate occlusion of these small vessels."

The actual form of the lesion in diffuse hyperplastic sclerosis is, therefore, strong evidence that the process of inflammation is responsible for its production.

In addition to the four main theories of arterio-sclerosis, which depend on the activity of the unit processes Involution, Growth, Inflammation, and Degeneration, it is suggested vaguely from time to time that the lesion is due to an altered nutrition of the vessel wall. This idea is crystallized by Adami in a few suggestive paragraphs dealing with the subject of productive fibroses, in which he makes the tentative suggestion that intimal proliferation in arterio-sclerosis may depend on stimulation rather than irritation, and that the nature of the stimulant may be an increased strain thrown on the intima by weakening of the underlying media, and in other cases the stimulant is an increased nutrition brought

about by heightened arterial tension. This theory turns rather on causes than processes; in its distinction between stimulation and irritation it has been considered in the review of Jores's theory, and in its reference to primary weakening of the media it comes under Thoma's theory of arterio-sclerosis. Lastly, the lesion in arterio-sclerosis has been compared to keloid, and though he does not make this comparison Ophüls[17] approaches this hypothesis in his reference to the autochthonous development of arterio-sclerosis. If simpler pathological conceptions fail it may be necessary to have recourse to the complicated explanations offered by the terms "productive fibroses," "fibrous diathesis," and "autochthonus development," but in the meantime I am of the opinion that the simple process of inflammation is sufficient explanation of the production of the lesion in diffuse hyperplastic sclerosis, and in the next and last lecture its activity in other forms of arterio-sclerosis will be considered.

REFERENCES.

[1] Thoma, R.: *Textbook of General Pathology*, translated by Bruce, 1896; *Virchow's Arch.*, 1886, 104, 209; *Ziegler's Beitr.*, 1891, 10, 433. [2] Evans, Geoffrey: *Proc. Roy. Soc. Med.*, 1921, 14, 315. [3] Klotz, Oskar: *Journ. Exper. Med.*, 1906, 8, 322. [4] Jores, L.: *Wesen u. Entwickelung d. Arteriosklerose*, Bonn, 1905. [5] Hatschek, E.: *Lab. Man. Element. Colloid. Chem.*, 1920, 124. [6] Bradford, S. C.: *Biochem. Journ.*, 1920, 14, 474. [7] Marchand: *Verhandl. des Cong. f. inn. Med.*, 1901, 21, 58. [8] Virchow, R.: *Cellular-Pathologie*, fourth edition, 1871, 463. [9] Warthin, Aldred Scott: *Harvey Lecture*, 1917. [10] Bergel, S.: *Die Lymphocytose*, Berlin, 1921. [11] von Ebner: v. Koelliker's *Handb. d. Gewebelehre*, 1902. [12] Senftleben: *Virchow's Arch.*, 1878, 72, 542. [13] Grünstein, N.: *Arch. f. Mikr. Anat.*, 1896, 47, 583. [14] Fisher, A. G. Timbrell: *Brit. Journ. Surgery*, 1922, 10, 52. [15] Adami, Abbott, and Nicholson: *Journ. Exper. Med.*, 1899, 4, 349. [16] Adami, J. G.: Allbutt and Rolleston's *System of Medicine*, 1911, 1, 766. [17] Ophüls, W.: *Stanford Univ. Pub. Med. Sci. Series*, 1921, 1, 5; *Journ. Am. Med. Assoc.*, 1921, 76, 700. [18] Klotz, O.: *Journ. Exper. Med.*, 1910, 12, 707.

TREATMENT OF PUERPERAL INFECTIONS.*

BY

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IN obstetrics probably more than in any other branch of medicine old methods of treatment persist long after their efficacy has been disproved by more recent scientific knowledge and experience. In recent years our conception of puerperal infections has undergone a great change, and yet the general body of the profession has not realized it, for we daily see and hear of procedures being carried out which we can only regard as harmful.

The great danger of specialization is that the specialist is apt to lose his perspective and to be so immersed in the details of his own subject as to lose sight of advances being made in other directions, many of which may be of the utmost importance to him. What we have to realize is that the general principles of pathology have a universal application, and that the details of treatment founded upon them should require only slight modification to meet the different anatomical and physiological conditions present in any region of the body.

I do not intend to go fully into the treatment of all the different varieties of puerperal infections. All I wish to do is to ask if that treatment is always in conformity with what we know of pathology and of infections in general, for on this must depend its likelihood of yielding the best results.

Much has been learned in recent years regarding the mode of invasion of infective organisms, and nothing is of more importance from the obstetrical point of view than a realization of the frequency with which infective organisms spread throughout the blood stream from what was at first a purely local focus. The organisms concerned principally in puerperal infections—the streptococci, staphylococci, colon bacilli, pneumococci, and gonococci—very readily gain the blood stream, so that probably a few escape into it from every local focus. In the majority of instances their numbers are so small and the reaction of the blood tissues so great that they do not long survive. Furthermore, a great many organisms hitherto regarded as purely saprophytic have been proved to be capable of living in the tissues and spreading by the circulating blood. In view of these facts we must discard altogether the old classification of puerperal infections into sapraemias and septicaemias. We must regard every case of bacterial invasion of the genital tract as a potential bacteriaemia and must direct our treatment accordingly.

* Read at meeting of Edinburgh Obstetrical Society, February, 1923.

When organisms invade a raw surface the lesion is at first quite localized. There is inflammatory reaction with a certain amount of destruction of tissue. Whether the condition remains localized depends on the degree of the reaction, on the number and virulence of the organisms, and on the amount of rest that can be ensured. If spread occurs it may take place by continuity of tissue, sometimes along the surface, often along the lymph channels, or the larger lymph vessels may be invaded and the organisms disseminated in the tissues through which they run, there producing other lesions. Thrombosis of blood vessels may occur and the organisms invade the thrombus, so that it becomes more and more extensive, spreading up the veins towards the heart and to a lesser extent along the arteries. From such a thrombus the organisms may spread into the general blood stream, although this is not necessarily the case. Pieces of thrombi may become detached, and such emboli, laden as they are with the infecting organism, may set up lesions in distant parts without there being any general blood infection. Finally, without any degree of thrombosis and often with a very minute local lesion there may be a massive general dissemination throughout the blood stream—a true bacteriaemia.

CAUSE AND SYMPTOMS.

Apply this general knowledge to the particular subject. We know that the majority of infections of the mucous surface of the puerperal uterus remain localized. Reaction is such that the organisms are destroyed. If any escape into the blood stream they are so few in number as not to survive. The patient has an elevation of temperature for a few days, the lochia may be profuse and purulent for a time, but soon everything settles down to normal.

Extension by continuity of tissue results in a spreading inflammation of the mucosa, in an infiltration of the muscular wall of the uterus, or an extension to the tubes, with or without pus formation. If the lymph stream is invaded, a general peritonitis may occur, but more usually there results an inflammatory reaction in the cellular tissue of the broad ligaments with, in my experience, nearly always an involvement of the tubes—the so-called pelvic cellulitis. This may or may not go on to abscess formation, but nearly always remains localized to the pelvis.

Thrombus formation is always present at the placental site, and any organismal invasion of this area is peculiarly liable to cause an extension of it; hence the frequency of septic thrombo-phlebitis of the ovarian and other pelvic veins as a manifestation of puerperal sepsis. Bacterial invasion of the general blood stream I have already referred to.

These are the lesions our general knowledge of infections would lead us to expect, and these are the lesions which we find clinically and in the *post-mortem* room in cases of puerperal sepsis:

1. A localized surface infection of the mucosa.
2. Spreading infective lesion of the general surface of the mucosa, often with extension to the tubes.
3. Inflammatory infiltration of the uterine wall, sometimes with abscess formation.
4. Inflammatory effusion in the cellular tissue of the broad ligaments with or without pus, and usually accompanied by tubal inflammation with or without pus.
5. General peritonitis.
6. Septic thrombo-phlebitis of the pelvic veins with or without emboli, and with or without bacteriaemia.
7. A general bacteriaemia.

In any one case there may, of course, be a combination of these conditions. Knowing these to be the possibilities, how ought we to approach the investigation and treatment of the case of a woman confined two or three days previously and presenting febrile symptoms? The first thing to do obviously is to exclude the possibility of the fever being due to any other cause than puerperal sepsis. This involves a careful examination of the heart, lungs, kidneys, breasts, and other organs. Some time ago Dr. W. A. Scott and I made an analysis of all our cases of fever in the puerperium; in 2,096 cases confined in the Burnside Maternity Hospital, Toronto, 476 showed definite puerperal morbidity according to the standard laid down by the British Medical Association. In only 50 of these could we find any definite septic lesion in the pelvis. In 20 the cause of the temperature was extra-genital from such conditions as pyelitis, cystitis, pneumonia, miliary tubercle, suppurating ear, etc. In the remaining 406 no definite lesion to account for the temperature could be detected by any of the ordinary methods of examination, including blood cultures. All of these patients made a

perfect recovery without any treatment. What the cause of the temperature was we could not definitely say, but doubtless in a good many of the cases there was some infective lesion of a mild character somewhere in the genital tract.

TREATMENT.

The first thing to do in any case is, therefore, to make a general examination of the patient and to abstain from any local treatment until the indications for it are quite definite. Finding nothing extragenitally we should investigate the pelvic organs. The perineum is inspected. If there is a wound and it looks inflamed, any stitches ought to be removed and free drainage allowed. The same applies to stitches in the cervix. A careful and very gentle bimanual examination may now be made. At this early stage probably nothing will be discovered, or at most a large tender uterus with profuse and perhaps fetid lochia, but in the absence of physical signs in the other systems, or in the perineum or cervix, we conclude that the uterus is the source of the infection. Now at this stage I most emphatically hold that exploration should cease. There is a great temptation to try to find out what the condition of the interior of the uterus is by introducing the finger into it. As a matter of fact we are seldom much the wiser even if we do get the finger in, and the possibilities of doing harm are great. We presume that there is a localized patch of inflammation on the uterine mucosa. What good is it going to do to feel it? None whatever; and it may be productive of much harm by creating fresh raw surfaces and disturbing thrombi. For some days after delivery the placental site is raised and irregular owing to the normal thrombus formation in the vessels. Any rough manipulation of this area may readily convert a local into a general blood infection. And if this is possible as a result of a digital exploration it is still more likely to occur if a curette is used. When we find the source of infection in the perineum we do not use a curette to scarify the infected tissue. We do not use a sharp spoon for a recent infective ulcer anywhere else in the body. Why, then, should we do it in the uterus? There is no good reason for it and several very good ones against it. In the first place we cannot hope to curette the infected patch only and leave the rest of the mucosa untouched. We are bound to create a large number of fresh raw surfaces and inoculate into them the infecting germ, thus favouring local spread. We are bound to disturb thrombi and open up blood vessels, leaving the door open for a general infection. We remove the reaction zone of tissue, open up the lymphatic channels, and produce such a disturbance in the relation of parts by our manipulations that extension to the blood stream, to the broad ligaments and peritoneum, is favoured. We know that all these things are liable to occur. Does curetting the uterus favour them or not? I say most emphatically that it does. And yet we know that it is frequently carried out.

But I hear it asked, Suppose there is a piece of placenta or membrane left inside the uterus—may this not be the cause of the rise of temperature, and, if so, should we not get it out? There is no reason for thinking that a piece of membrane or of placenta retained in the uterus predisposes to bacterial invasion. A recent investigation of 149 cases of retained placenta showed that in 44 per cent. the puerperium was absolutely afebrile, in 50 per cent. there was very slight fever, and in only 6 per cent. was there severe fever, with one death, and in four of these severe cases there had been intrauterine manipulation of various kinds. It has been my teaching for some time, in conformity with that of the great majority of obstetricians, that even at the time of confinement it is wrong to put the hand, finger, or instrument into the uterus to remove pieces of membrane or placenta which may have been left behind unless there is excessive haemorrhage. The risk of introducing septic organisms is far greater than that run by leaving things as they are. Such retained portions separate and come away of themselves in a few days. And if it is risky to remove such pieces from the presumably germ-free uterine wall, how much more so is it when we know organisms to be present! The infective process is more likely to be in the part of the uterine wall from which the placenta has been detached rather than on that to which a small piece of membrane or placenta still adheres. In forcibly detaching such a piece we are simply opening up fresh surfaces for infection. Therefore I hold that even when we know that there is a portion of placenta or membrane in the uterus it is wrong to curette or introduce the finger or other instrument.

Even the intrauterine douche I believe to be more productive of harm than of good. The intrauterine douche was introduced as a means of treatment in the early days of antiseptics, when it was thought that they did much more in the way of destroying organisms in the tissues than we now know to be the case. Any antiseptic we may use as an intrauterine douche has nothing more than a surface cleansing effect, and very little of that. It gets rid of possible accumulation of decomposing matter and pus from the uterine cavity, but the uterus is a muscular organ, and we have drugs at our disposal—ergot, pituitrin, and quinine—which, when administered, prevent any such accumulation. I can well remember when I was a house-surgeon in the Edinburgh Royal Maternity Hospital twenty years ago, when it was practically a routine to give an intrauterine douche to every patient with a rise of temperature lasting for more than two days, that in a very large proportion the douche was followed by a rigor or chill and a further elevation of temperature. That was supposed to be a nervous phenomenon. But was it? Is it not far more likely that it was due to a flooding of the blood stream with organisms—a temporary bacteriaemia?

Sampson has shown, by injecting the venous channels of the uterus with a substance which gives a shadow with the *x* rays, what a very complicated system the veins form, and how free their communication is with the surface vessels of the mucosa. The thinness of their walls and the power of contraction in the uterine muscle makes it exceedingly easy for any minute substance in the uterine cavity or on the surface of the mucosa to be sucked into them, provided a surface vessel is laid open. Frank has shown, by blood cultures taken before and after intrauterine douching and simple manipulation of the uterus, that bacteriaemia is very frequent after such proceedings. It is usually only a temporary condition, the blood again being sterile after a few hours, but if the initial dose of organisms is massive enough they may continue to grow and the case develop into one of true septicaemia.

Recent experience in the treatment of septic wounds has shown that the essential thing is free drainage, and the fewer antiseptics and the less interference the better. Now in the infected uterus the cervical canal always remains patulous and drainage is assured. It may be helped by placing the patient in the Fowler position and by administering the drugs I have mentioned. An ice-bag may be applied to the abdomen. It relieves any pain that may be present and reduces fever. A free liquid diet is given, the bowels are kept open but not severely purged, and if possible the patient is kept in the open air. Meantime a blood culture ought to be taken and repeated at intervals. We have ceased to take swabs from the interior of the uterus in the initial stages of infection because the results obtained were not commensurate with the difficulty of the proceeding and the risk to the patient. If there is accumulation of fetid discharges in the vagina a gentle vaginal douche may be given.

To this line of treatment the great majority of puerperal infections will yield and the patient make a perfect recovery. If extension takes place, this will declare itself in the course of a day or two and a definite diagnosis can be made. Cellulitis should be evident to bimanual palpation in three or four days; a pus tube a little later. When these have declared themselves the patient must make up her mind to a long period of inaction. In the majority of cases cellulitis will resolve in the course of a few weeks. A few undergo suppuration, and pus must be evacuated through the vagina or extraperitoneally through the abdominal wall. In the case of a pus tube we wait, if possible, until the temperature has reached and remained normal for some time before attempting removal. If the temperature remains high and the patient's general condition is deteriorating, pus may be evacuated through an incision in the posterior fornix and, if necessary, the tube removed at a later date. If there is evidence of peritonitis an incision may be made in the posterior fornix and drainage established.

Thrombo-phlebitis is evidenced by wide excursions of temperature, by repeated chills, and by the palpation of some thickening on one or on both sides of the uterus. Such cases may be dealt with by ligation of the ovarian or common iliac veins. This somewhat heroic treatment has been carried out by many operators, often with surprisingly good results. If there is evidence of local abscess formation in the uterine wall, hysterectomy can be performed.

If the temperature remains high and there are not present in the pelvis physical signs to account for it the probability

is that there is a blood infection. This can only be shown by blood culture, frequently repeated if necessary. Dr. W. S. Cosbie, a member of my staff in Toronto General Hospital, took cultures from all puerperal patients running a temperature. His investigations are not completed, but we were surprised to find that so many of them had positive cultures at one time or other. Most of these made a complete recovery without special treatment.

In the treatment of true cases of bacteriaemia we have used various kinds of intravenous medication such as magnesium sulphate, eusol, and salvarsan. We have also used serums. With all of them we have had recoveries, and at first attributed these to the drug used, until we found that, with no intravenous medication and with no serum, just as many patients got well. The great difficulty in assessing the value of these forms of treatment is that spontaneous recovery so often does take place.

What I have said regarding the treatment of puerperal infections occurring after a full-time delivery applies equally to those arising after abortion, either complete or incomplete. I make it a rule never to curette the uterus or carry out any intrauterine manipulation in a case of abortion if the patient has a rise of temperature, unless there is severe haemorrhage. If the abortion is incomplete and a mass is felt projecting through and blocking the cervical canal, this may be very gently removed, but more interference than that I think unwise. After the temperature has been normal for some days, if there is still evidence that the abortion is incomplete by the persistence of bleeding and the patulous condition of the cervix, gentle curetting may be carried out. Even after waiting this time it is almost invariably found that the patient's temperature rises after the operation, and she not infrequently has a rigor, showing almost certainly that there has been a blood invasion. Fortunately, in most cases, this is only temporary.

I have only touched very briefly on the whole subject of puerperal sepsis, but my purpose is served if I initiate some discussion on the inadvisability or otherwise of active interference with the interior of the uterus in the presence of fever. From all the evidence of the literature and from my own experience I hold that it is inadvisable.

THE USE OF QUINIDINE IN AURICULAR FIBRILLATION.*

BY

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THERE have now been recorded several hundreds of cases of auricular fibrillation in which normal rhythm has been restored, and it can be accepted as demonstrated that quinidine can bring about this change of mechanism in a large proportion of all cases.

Like all powerful drugs, quinidine can produce effects that are unpleasant, or even dangerous, and so it is necessary to learn in what cases the conversion can be effected without producing such results. The advantages to be gained might conceivably be so great that the risk of unpleasant symptoms would not be a serious deterrent to giving the drug, but in digitalis we have a method of treating the effects of auricular fibrillation that is so successful that it must be seriously considered in what cases a successful quinidine result surpasses in therapeutic value the effect of digitalis treatment.

Answers to the two following questions must be obtained before quinidine is to find a place in practical therapeutics:

(*a*) In what cases can the conversion be brought about without risk of producing dangerous symptoms?

(*b*) In what cases does the therapeutic effect of this conversion surpass the effect of digitalis treatment?

Discussion may well help to answer two further questions:

(*c*) What is the best method of administration in regard to dosage?

(*d*) For how long after the conversion should the quinidine treatment be continued?

Many other questions must arise, but preliminary answers to these four are desirable before the necessary amount of evidence will be collected on which sound therapeutics can be based.

Among the earlier cases in which I tried quinidine was a woman, aged 54, with a greatly enlarged heart, severe mitral regurgitation, and stenosis of rheumatic origin, and auricular fibrillation. Quinidine sulphate (5 grains night and morning) caused auricular flutter to develop, and after eight days, during which the auricular rate was about 200 and the ventricular rate 80 to 90, the pulse rate rose suddenly to 200, probably as the result of a 1 : 1 response. On stopping the quinidine and commencing digitalis fibrillation returned.

A woman, aged 31, with mitral stenosis of rheumatic origin and severe heart failure, at rest in bed had a ventricular rate of only 50 to 65. After five days of quinidine sulphate (5 grains three times a day) auricular flutter resulted, and after six days more on 7½ grains three times a day she had a Stokes-Adams attack with ventricular standstill.

A woman, aged 54, with a greatly enlarged heart, mitral regurgitation, and auricular fibrillation, evidence of arterial and renal disease, and a ventricular rate of 180, responded moderately to digitalis. At a ventricular rate of 90 numerous ventricular extra-systoles occurred. With quinidine sulphate (15 grains at intervals of six hours) normal rhythm resulted after four doses, but was accompanied by precordial distress and nausea. On stopping the quinidine auricular fibrillation returned a day later with relief from the subjective distress.

Another limitation to the administration was seen in a woman, aged 48, with mitral stenosis of unknown origin and auricular fibrillation of probably only a few weeks' duration. The response to digitalis was good, but after nine days of quinidine sulphate, during which she received 175 grains in all, a severe toxic erythema developed with headache, nausea, and fever.

After the experience with these cases careful selection was made, avoiding all cases with evidence of much damage to the cardiac structures such as great enlargement, heart-block, or severe valvular disease.

A man, aged 39, with syphilitic aortitis and severe heart failure but no evidence of valvular disease, responded well to digitalis and received antisyphilitic treatment. Three months later normal rhythm was restored after ten days, during which 180 grains of quinidine sulphate was given. The treatment was continued for three months on diminishing doses, and nearly two years later the rhythm is still normal except for ventricular extra-systoles, and he feels fit to return to his work as a stevedore.

In the case of a man, aged 26, with no clear evidence of cardiac enlargement or of valvular disease and no evidence of infection other than malaria, a successful quinidine effect has continued for twenty months, and he is now working as a labourer. The auricular fibrillation had been present for six weeks before admission, and the digitalis response was good.

A similar successful result was seen in a man aged 40 with exophthalmic goitre, without evidence of valvular disease, in whom auricular fibrillation had been present probably for five years, and was still present three weeks after partial thyroidectomy by Mr. Dunhill. Normal rhythm resulted after four doses of quinidine sulphate (5 grains three times a day), and has persisted with gradually increasing efficiency for five months.

A woman, aged 45, with exophthalmic goitre of a mild degree had probably had auricular fibrillation for some years. Severe heart failure responded well to digitalis, and normal rhythm resulted after six doses of quinidine sulphate (7½ grains three times a day). The dosage was gradually reduced and treatment discontinued four weeks later. An increase in the thyrotoxic symptoms was accompanied by a return of fibrillation. Partial thyroidectomy was performed by Mr. Dunhill, and as fibrillation was still present a week later quinidine was given, and normal rhythm returned after four doses of 5 grains three times a day.

Another case of this nature shows similar features.

A girl, aged 26, with mitral stenosis of rheumatic origin, responded well to digitalis objectively but continued to have severe dyspnoea and palpitations. Quinidine sulphate (5 grains three times a day) restored normal rhythm after seven doses, with relief from the palpitations. This dosage has been continued for nearly a year now, and a severe relapse occurred during a return of the rheumatic infection. Relapses of a few days' duration have occurred on three other occasions; on one she had a bad cold, on another much worry in connexion with the death of her mother, and on the third she tried to do some heavier work than usual.

There are cases of thyrotoxic auricular fibrillation in which normal rhythm was restored a few days after partial thyroidectomy without other interference, and cases in which auricular fibrillation occurred only for a few hours after operation during the stage of increased excitement. They suggest that the auricular fibrillation is due to an active toxic action, and that normal rhythm may result simply from the cessation of this action. The difficulty in obtaining a stable normal rhythm with quinidine in active toxic cases, and the stability obtained after thyroidectomy, indicate that in this type of case to obtain a stable normal rhythm the thyrotoxic factor must be treated.

In the other types of cases the indications of a similar active agent are not so complete, but the accumulation of more evidence may decide in favour of a similar state of

*Abstract of remarks made in opening a discussion at a meeting of the Therapeutic Section of the Royal Society of Medicine, March 13th, 1923.

affairs in them also. The stability of the syphilitic case in which antisyphilitic treatment was given supports this view. The stability in the case in which no definite cardiac lesion could be found and in which the only known infection was malaria may well be due to the cessation of the causal factor, whatever it was, before the patient came under observation. The instability of the rheumatic case, even when quinidine treatment has been continued for nine months, is suggestive of a constantly or intermittently active factor tending to produce fibrillation. This idea is fully in keeping with the theory derived from the clinical study of such cases—that the rheumatic infection may continue for years, causing gradually increasing stenosis of the mitral valve, often without well defined attacks of acute rheumatic infection. In such a case it is of interest to note the additional factors present during the relapses into auricular fibrillation. Unfortunately there is no successful method of treating the rheumatic infection of the heart.

In addition to active agents it is probable that auricular fibrillation can result from permanent structural changes in the heart, in which case a stable normal rhythm after cessation of the quinidine administration would be unlikely.

CONCLUSIONS.

1. Quinidine treatment will result in a stable normal rhythm if the cause of the auricular fibrillation can be successfully treated or has ceased to be active.
2. Cases in which there are extensive structural changes in the heart are not suitable for quinidine treatment, especially if the response to digitalis is not good, as dangerous symptoms may result.
3. In some cases at least the comfort and efficiency of the patient is greater when a normal rhythm results from quinidine treatment than when digitalis treatment alone is used.
4. In the cases in which the results are satisfactory larger doses than 10 grains of quinidine sulphate at intervals of six hours were not necessary, nor smaller initial doses than 5 grains three times a day.
5. If necessary to maintain normal rhythm, quinidine may be continued to be administered indefinitely in doses of at least 5 grains three times a day, and it is probably advisable in all cases to continue it for some weeks after normal rhythm has resulted, though in gradually decreasing doses.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

FIXATION OF CAECUM IN CHRONIC INTUSSUSCEPTION.

THE following case of chronic intussusception which took an acute form came under my care in November of last year, and seems of sufficient interest to warrant publication.

N. C., a boy aged 4 years, was admitted to hospital on November 16th, 1922. The mother gave the following history:

On November 4th the child complained of severe pain in the region of the stomach. The pain was attributed to worms, and no significance was attached to it. The pain, however, recurred at varying intervals for the next few days. On November 7th the child vomited. The bowels had been quite regular, though once the mother noticed some "slime" in the stools. On November 11th the child was given two "yellow worm powders" and a large dose of castor oil. Two days later two round worms were passed. He still complained of pains, and cried almost incessantly until November 16th, when he was brought to hospital.

On admission his general condition was good. An indefinite tumour could be left below the right costal margin, and there was loss of resistance in the right iliac fossa. He did not complain of pain. On November 17th and 18th the child had normal motions, but slight abdominal pain. On the 19th his stools were blood-streaked, the pain was worse, and a good deal of mucus was present in the motion. A typical sausage-shaped tumour could be felt in the region of the descending colon.

Operation.

The apex of the intussusception was in the left iliac fossa, about the beginning of the sigmoid, and was reduced with some difficulty. There was some extravasation of blood in the mesenteries of the small intestine and ascending colon, and the vessels were very much engorged.

An area about the size of half a crown at the apex of the caecum was grey and sodden. The appendix was healthy. The caecum and ascending colon were very mobile and the mesentery of the small intestine long. Owing to the congested state of the mesentery and ascending mesocolon I did not like to put stitches in them, for fixation purposes, so I decided to use the appendix—(1) for fixation of the caecum, (2) by traction on it to turn the doubtful apex of the caecum up against the anterior abdominal wall, in case it should prove non-viable. I ligatured and divided the meso-appendix, and brought the appendix out through a stab wound just below McBurney's point, fixed it with a couple of sutures, and put a gauze wick down to the apex of the caecum, which was directly under the stab wound.

In forty-eight hours I removed the appendix level with the skin and withdrew the gauze drain; I also destroyed the mucous membrane with a probe dipped in pure carbolic.

The boy made a good recovery. The appendix required a second application of carbolic, as the mucous membrane was rather redundant, and secreted a little moisture.

A seven-hour picture after an umbrose meal showed the caecum in the position in which it was placed just below McBurney's point. It would be interesting to know—

1. In what percentage of cases there is recurrence of intussusception after operation.
2. If the risk of recurrence is enough to make an attempt at fixation worth while.
3. If fixation of the caecum by the appendix is suitable for prolapsed or mobile caecum, etc.

Londonderry. J. B. ALEXANDER, M.B., B.Ch.

SUBOCCIPITAL MENINGOCELE SUCCESSFULLY REMOVED.

THE following case, in which a large meningocele which was present at birth was successfully removed by operation, is, we think, of sufficient interest to warrant publication.

Marie P. was born on May 19th, 1921, with a large meningocele, the birth being uneventful and taking place before the arrival of a doctor. The baby was otherwise healthy. It was found that the growth steadily increased after birth, and, the covering becoming thinner, it was obvious that rupture was imminent. It was decided to operate, and the baby was removed to North Lonsdale Hospital. Before operation the dimensions were: horizontal 6½ in., vertical 5 in., circumference at junction with skull 7 in.

Operation.

On August 1st, 1921, assisted by Dr. T. E. Roberts, I dissected back the skin and exposed the underlying membrane. This was very difficult near the neck of the sac, as there was practically nothing between skin and membrane. With a large opening

Photographs showing the child before and after removal of the meningocele.

between sac and the skull there was danger of collapse from sudden loss of cerebro-spinal fluid; to obviate this an intestinal clamp was loosely applied to the neck of the sac. The sac was then opened at a distance to verify the absence of nerve tissue. The clamp was quickly closed, thus preventing leakage of fluid. The sac was cut away and a continuous suture applied round stump and clamp, as in Barling's operation for piles. The clamp was withdrawn and suture quickly tightened. A few interrupted sutures were applied where fluid was oozing. The deeper structures were drawn over the stump and the wound closed. An anchor dressing was applied.

For a few days the temperature oscillated between normal and 102°, with muscular twitchings suggestive of impending convulsions. Bromides were given, and the temperature came down to normal and all twitchings ceased. Owing to fear of yielding of scar the anchor dressing was kept on for two weeks and cut its way out, leaving a granulating surface which did not involve deeper structures. Secondary suturing closed this, and complete healing quickly followed. The baby was sent home well five weeks later, and has remained well and normal since. She has just recovered from whooping-cough and is beginning to walk.

I am indebted to Dr. Kathleen Rutherford for the photographs, which show the baby before and after operation, also for her very helpful interest in the case. The ultimate recovery of the baby was largely due to the skilful nursing of Sister Levison.

JOHN LIVINGSTON, M.D.Durh., F.R.C.S.Edin., Honorary Surgeon, North Lonsdale Hospital.

Barrow.

Reports of Societies.

THE NEED FOR PUBLIC EDUCATION IN THE CONTROL OF CANCER.

A MEETING of the Fellows of the Royal Society of Medicine was held on March 13th to discuss the urgent need for education in the control of cancer. The President of the Society (Sir W. HALE-WHITE) was in the chair.

Mr. J. E. ADAMS, who introduced the subject in a brief address, said that his own desire had been to see the formation of a society for the control of cancer, similar to the societies already in existence for combating tuberculosis and venereal disease. But before anything of this kind could be done the support of the profession had to be enlisted, and as he thought that the Royal Society of Medicine—without any disrespect to other bodies—was the headquarters of scientific intelligence in the medical profession, it was proper that the first meeting on the subject should be a meeting of the Fellows. It was well known that cancer was on the increase. Little more was known as to its causation than was the case twenty years ago. The majority of cancer patients came for medical assistance too late for any reasonable chance of cure. Medical men were all aware of a number of conditions which predisposed to cancer, such as syphilis, chronic degenerative mastitis, and unhealed ulcerations of the uterine cervix. Were these conditions treated as energetically as their association with cancer demanded? In any woman over 40 a lump in the breast was ten times more likely to be malignant than to be simple. Middle-aged men were apt to think that indigestion and haemorrhoids were the inevitable result of a sedentary life, and that a bottle of medicine or a few pills would put them right; but the real trouble might be a growth in the bowel. It ought to be recognized by the public that treatment without examination was not worth paying for, and by the profession that it was not worth doing. The public required enlightenment on this matter. He proceeded to give details of the intensive campaigns carried out by the American Society for the Control of Cancer, which was founded in 1913 in New York to disseminate knowledge concerning the symptoms, diagnosis, treatment, and prevention of the disease; to investigate conditions under which cancer was found; and to compile statistics in relation thereto. Pamphlets which the man in the street could understand were issued by this body, and publicity was further assured by posters, films, and public meetings. He was informed that there had been no serious trouble from cancerophobia as a result of this agitation. In this country little had been done, though the medical officers of health for two or three local authorities—notably Portsmouth, and Holborn in London—had spread leaflets broadcast urging people who had certain symptoms to consult a doctor without delay. He gathered that the British Red Cross Society was prepared to help in the distribution of authoritative intelligence, compiled by medical men, on this subject, and he suggested that a committee might be formed by the Council of the Royal Society of Medicine to collect and transmit the facts to the Red Cross Society. To avoid the danger of oblique advertising, nothing should be published except under the imprimatur of the committee, and all names save that of the Royal Society of Medicine should be withheld. He proposed the following resolutions:

That it is desirable that the public should be given more information as to the early signs of cancer and the prospects of cure by immediate treatment.

That the British Red Cross Society be asked to conduct this publicity campaign by means of lectures and pamphlets.

That the Council of the Royal Society of Medicine be requested to nominate a standing committee to supply information to the British Red Cross Society suitable for wide dissemination and the education of the public.

Dr. LAPTHORN SMITH seconded the resolutions. He believed that the propaganda should start with the medical profession, and be extended to nurses, midwives, clergymen, district and health visitors, and all who came in touch with the homes of the people.

Mr. C. P. CHILDE (President-elect of the British Medical Association) said that seventeen years ago he contributed a volume to the New Library of Medicine advocating the course which it was now proposed to adopt. He believed that that book, *The Control of a Scourge*, which was also published in America, might have had something to do with the growth of the idea which resulted in the American Society for the Control of Cancer. He was told by the publishers that lately there had been an increased demand for the book in this country, and he was asked to prepare a second edition or to rewrite the book. The most important step was to secure the support of the medical profession. The cause of cancer was not yet known, but things which were known were its age incidence, its frequent association with chronic irritation, and that it was in the first instance a local disease and later disseminated itself widely from its point of origin. The clinical descriptions of cancer in the textbooks were not those of early cancer at all. The fact to be grasped was that cancer was a curable disease, and yet very few cases were cured. The disease being curable, it was the duty of the medical profession to put the public in a position to profit from the possibility of cure. The only possible objection was cancerophobia, but he attached very little weight to that. The public knew already what a deadly disease it was, and he did not think that cancerophobia would be more frequent than now if people were told simply that by applying earlier for treatment they might possibly be cured. All women should be told, for instance, that if bleeding persisted after the menopause they should consult their doctor at once. The same course should be taken in the case of men advancing in life who had any sore on the lower lip. He pointed out the need for the instruction of nurses and midwives as a part of their curriculum in the importance of noticing early signs of cancer and bringing such cases to medical attention.

The Hon. Sir ARTHUR STANLEY (Chairman of the British Red Cross Society) said that his society would be glad to do anything it could to help in this work. The society was not merely a war society. Its workers were anxious to carry on the Red Cross tradition into peace. But in all that it could do in the way of publicity it understood thoroughly the need for close medical supervision.

Lord DAWSON OF PENN said that the fact must not be lost sight of that research into the causes of cancer must always stand in the forefront of the programme. But while they were waiting for the much desired results of that research it was necessary to get existing cases under treatment as early as possible. The first thing to do was to bring home to the profession the need for a closer appreciation of the early symptoms of the disease. He believed that attention was paid to this matter in the medical schools at the present time. But when the qualified man went out to take up his practice he found himself deprived alike of the atmosphere and the equipment to which he had been accustomed in hospital. He was deprived in many instances of those ancillary means of diagnosis which were of such great value, and the effect of that was not only to limit his powers but slowly to discourage his zeal. Until hospital and clinical equipment was made readily accessible all over the country the movement in this respect would be handicapped. If medical men were given proper opportunities and were encouraged to take the utmost care in this matter it would have a repercussion upon the public, for good doctors always meant sensible patients. He was doubtful of the value of a direct and specialized propaganda against cancer. The more useful plan was to educate the public in health by means of lectures which dealt with health and variations from health, and incidentally the signs of such variations, not of cancer only but of every disorder, and to avoid the special application of a symptom to a particular disease. This last was the function of the doctor. The significance of the variation should be left to the doctor, whom the patients should be encouraged to consult. He thought cancerophobia a real danger, but that by these means it could be averted. In propaganda it was not enough to be intensive and energetic; one must also be wise. Lectures were the most appropriate means for educating the public. To employ broadcasting and kinemas would mean the concentration of attention on morbid and lurid aspects, which would do more harm than good. The antivenereal campaign began under very special circumstances, and no doubt its methods of propaganda at the time were rightly chosen. But even there the time had now come to transfer the propaganda from the streets to the lecture hall, where, in the case of cancer, it ought to begin.

Dr. HERBERT SPENCER said that sixteen years ago he read a paper at the Annual Meeting of the British Medical Association at Exeter dealing with measures to be recommended to secure the earlier recognition of uterine cancer. The views expressed in that paper were received with a unanimity rare in professional discussions, especially gynaecological ones.

One line of action which he advocated was to bring forward for demonstration to the students in the medical schools patients who had remained for twenty or twenty-five years free from recurrence. This would effectively counteract the pessimism which existed in the public mind, and to some extent in the professional mind, with regard to the possibility of cancer cure. Even the smallest town ought also to have its cottage hospital where visiting consultants would be available to examine patients referred for suspected cancer.

Sir NAPIER BURNETT urged that the out-patient departments of hospitals, instead of being in charge of the junior members of the staff, should be visited by the senior members, for here they would be able to do much in the early detection of cancer, whereas in the wards they saw chiefly the advanced stages of the disease.

Mr. CECIL ROWNTREE pleaded for more intensive and highly organized research work into the cause of cancer and a better distribution of clinical and pathological material among the different laboratories so as to prevent duplication of researches. A central body to guide the work done in the different laboratories so that it might have more cohesion and sequence seemed desirable, as well as some method of pooling and periodically publishing the progress of experiments.

Dr. MEARNS FRASER (M.O.H. Portsmouth) said that cancer was rapidly obtaining the most prominent position in the death returns. Twenty years ago in Portsmouth it accounted for one death in twenty, now it accounted for one in ten. Thousands of people were losing their lives yearly who might have been cured had they consulted their doctors at an early stage. He urged that the proper people to bring the matter forward were the local health authorities.

Dr. S. MONCKTON COPEMAN (Ministry of Health) said that the Ministry had recently founded a departmental committee on cancer, to which it was proposed to co-opt representatives of various bodies who were interested in the subject from the clinical and pathological sides. He suggested that the Royal Society of Medicine might perhaps think it desirable to co-operate with the Government committee before taking any special line of its own. The Public Health Services of the State, including the nurses and health visitors, could all be made use of for this purpose.

Dr. JOHN SHAW urged that the statistical returns proved the uselessness of operations for cancer. The evolution of the modern operation for cancer of the female breast, its greater frequency, its earlier date, its wider extent, had resulted in a progressive increase in the death rate and the curtailment of the span of life of its victims, notwithstanding diminished immediate risks from operation. Fresh surgical "triumphs" had been attended by rapid rises in the death rates from cancer of the organs concerned.

The resolutions were then put and carried.

RADIUM TREATMENT OF UTERINE HAEMORRHAGE.

AT a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine, held on March 1st, with the President, Dr. T. WATTS EDEN, in the chair, Mr. SIDNEY FORSDIKE read a paper on the treatment of severe and persistent uterine haemorrhage by radium, with a report upon 45 cases.

Mr. Forsdike dealt with the type of case which was sometimes described as the bleeding uterus, where no pelvic lesion could be found to account for the haemorrhage, and the cases cited were those which had proven refractory to palliative and to operative treatment. Of the 45 cases under consideration no fewer than 26 had undergone some form of operation or combination of operations, including dilatation and curettage, removal of polypi, amputation of cervix, oöphorectomy, or salpingo-oöphorectomy, and some of the cases had been curetted more than once. Four of the cases were associated with fibroids. All the uteri were enlarged, but were broadly divisible into two groups: (*a*) the systolic uterus, which admitted a sound for 3 to 3½ inches, and which yielded little or no tissue to the curette; (*b*) the diastolic uterus, which admitted a sound for 3½ to 5 inches and which yielded an amount of thickened endometrium. In all cases an exploratory dilatation and curettage was done and any tissue removed was submitted to microscopic examination. The cervix, if unhealthy, was submitted to a preliminary cleansing treatment. The radium was placed *in utero* and only the gamma ray used. The vagina was plugged, with the twofold object of maintaining the radium in place and of keeping the bladder and rectum away from the source of energy. The additional precaution was taken of introducing a self-retaining catheter into the bladder for twenty-four hours. There were two main groups of cases: (*a*) those in whom it was desired to modify the catamenia by exposure to small doses of radium, of which there were 3 cases; (*b*) those in whom it was desired to suppress entirely that function by exposure to a heavy dose of radium, of which there were 42 cases. In group (*a*) two of the three cases were successful, and the third had an ovary removed at another hospital after an initial treatment. In group (*b*) all the cases responded to treatment, five of them requiring a second exposure. Generally speaking, no anaesthetic was required in giving a second exposure. In a certain number of cases some pain and discomfort were noted while the radium was *in situ*, which disappeared promptly on the removal of the radium. In a few cases post-anaesthetic vomiting was aggravated, but quickly subsided upon withdrawal of the tube. As regards the results of treatment, in 10 cases there was no further haemorrhage, in 17 cases there was one period, in 11 cases there were two periods, and in 4 cases there were three periods, the actual quantity of blood lost being small; but in cases where the exposure was given immediately before a period was due the loss was apt to be severe. The radium menopause was due entirely, he believed, to action upon the uterus, in favour of which the evidence rested not only upon clinical but on experimental grounds. Radium was implanted in the uterus of a cat, and the opposite ovary was fixed at a distance of 8 cm. from it; the results were noted at the end of twelve, twenty-one, and sixty days. In none of the experiments did the ovary show any macroscopic or microscopic change, whereas the irradiated endometrium showed a gradual transformation into connective tissue, with an entire loss of glands, suppression of blood vessels, and a notable diminution in the number of stroma cells. There was one absolute contraindication to the use of radium in these cases, and that was the presence of a pelvic inflammation, recent or remote, as it was likely to set up abscess formation.

Dr. BLACKER said he had been treating haemorrhage from the uterus at the menopause, in small fibroids, and in cases of so-called functional menorrhagia, since 1916. He had had altogether 77 cases, and his results had been uniformly good. Radium was a specific for climacteric haemorrhage. It should only be employed in small uncomplicated fibroids; any pelvic complication, such as disease of the appendages, was a complete bar to the use of radium. The chief action of radium was, he believed, on the ovaries.

Mr. PROVIS thought that *x* rays were just as successful as radium, if not more so, in cases of menopausal haemorrhage.

Professor HENRY BRIGGS showed a specimen of angioma of the vaginal wall, found in a primigravida at the thirty-sixth week of pregnancy; there was no history of local injury and no unusual varicosity of vulval or other veins. Mr. A. C. PALMER showed a mass of secondary leio-myo-sarcoma which originated in the stump of the cervix after subtotal hysterectomy. Mr. EARDLEY HOLLAND showed a leio-myo-sarcoma of a fibromyoma removed by subtotal hysterectomy; examination revealed cystic degeneration of a fibromyoma which had undergone sarcomatous changes. Dr. J. D. BARRIS showed two specimens of sarcoma of the uterus. The first was obtained *post mortem* from a multipara aged 57. The second was obtained by panhysterectomy from a multipara aged 67, who had had profuse vaginal haemorrhage for three weeks. Recurrence took place two months after the operation, and she died in three months from haemorrhage from secondary vaginal masses. The uterus was filled with a large friable growth. Dr. RUSSELL ANDREWS said that in his own experience of sarcoma of the uterus the growth usually recurred within a short time of operation. Dr. BLACKER thought that in any case in which subtotal hysterectomy was practised the tumour should be opened before the operation was completed, and that if the tumour showed signs of breaking down, other than simple cystic degeneration, the cervix should be removed. Mr. LUKER showed a specimen of chorion-epithelioma of the uterus; the chief symptom was abdominal pain, with amenorrhoea for the last three months; the uterus was enlarged, forming a tumour reaching almost up to the umbilicus, and death occurred from haemorrhage from perforation of the right vaginal fornix by the growth.

THE TREATMENT OF PUERPERAL INFECTIONS.

AT a meeting of the Edinburgh Obstetrical Society on February 14th, when the President, Dr. J. LAMOND LACKIE, was in the chair, Professor B. P. WATSON read a paper on the treatment of puerperal infections, which is published in full at page 505.

Dr. HAIG FERGUSON thought Professor Watson had expressed views very generally held, and had brought out very clearly the points which now influenced local treatment of a septic uterus. There could be no question as regards the inadvisability of using the curette, but he thought Professor Watson had been rather severe upon the intrauterine douche. To get the best results from the intrauterine douche it should, of course, be used early, before the poison was absorbed into the system. He did not think that its early use was in any way contraindicated, provided care was taken not to introduce any fresh organisms into the uterus from the vagina, or to use too strong an antiseptic, and that the temperature of the douche was from 115° to 120° F. The stimulation of the hot water undoubtedly helped to intensify the use of drugs like pituitrin, ergotin, and quinine. He used an emulsion of turpentine, the value of which was first brought to his notice by Fabre of Lyons. The emulsion could easily be made by mixing a teaspoonful of turpentine and a teaspoonful of lysol in each pint of water. The turpentine loosened any shreds of dead tissue which might be adherent in the uterus, and was a very safe antiseptic.

Dr. KEPPIE PATERSON mentioned two cases which occurred when much less was known about antiseptics and when instruments were not boiled but soaked in an antiseptic lotion. The forceps were the evident source of the sepsis in both; in one the temperature rose about the seventh day to 103.4°; it fell within a day to normal and remained so after one intrauterine douche of 1 in 2,000 sublimate lotion, which was the antiseptic then mainly used. In about a week another case showed a temperature of 106.6°, which became normal within twenty-four hours after one intrauterine douche, and though there was a slight rise subsequently the temperature very soon fell permanently to normal. In surgery the first principle in treating sepsis was to remove the focus if possible. It was not safe to trust to the patient's blood, it might not be in a healthy condition. He had never seen rigors nor any bad results after intrauterine douching, and believed that they were due to faulty technique by grazing the uterus in the insertion of the catheter and so creating a fresh surface for septic absorption. So the parturient canal after labour was often in a more or less lacerated condition and liable to contamination both from within and without. He practised thorough irrigation with sublimate lotion (1 in 4,000) once immediately after labour in practically every case with excellent results.

Dr. FORDYCE was in cordial agreement with almost all that Professor Watson had said. He was surprised that Professor Watson had found it necessary to emphasize the importance of not curetting the uterus in septic cases. He had long ceased to explore the uterus for a piece of membrane. He had also given up the intrauterine douche, except in cases where the infection seemed to start very early—at about the third day—when an intrauterine douche might be indicated. In fact, when a patient had puerperal fever, her recovery depended upon her own powers of resistance and her own strength. In cases of abortion, if the patient had high fever, and not very much haemorrhage, he thought it advisable to dilate the cervix, explore with the finger, and remove the putrid placental tissue. It seemed that the poison must be of local manufacture, and to leave it would be very dangerous. It was true that after the removal of the placenta a rise of temperature might occur, but in the great majority of cases it was only temporary and the patient made a complete recovery afterwards, while if it were left the patient would go on absorbing more and more poison and would probably die. Dr. Fordyce thought it would be exceedingly dangerous to stand by and do nothing.

Miss HERZFELD expressed herself as entirely in agreement with what Professor Watson had said, especially with reference to the treatment of septic abortion. She quoted one case in which curettage was followed by development of pelvic cellulitis. Dr. YOUNG wondered whether Professor Watson's routine was quite in conformity with general surgical principles, because he seemed to base his whole routine on the analogy with the procedure carried out in ordinary surgical sepsis. If the uterus contained a piece of dead tissue was it the proper course to leave it there and rely upon the uterine contractions to expel it? Dr. JOAN ROSE suggested that the same kind of treatment should be given to retained portions of membrane and placenta as to cases of adherent placenta—namely, manual removal at labour. She cited a case where non-removal of retained products of conception had been followed by chorion-epithelioma as well as sepsis. Dr. H. S. DAVIDSON said that the strongest point for Professor Watson's method was that the death rate for puerperal fever had not come down within the last few years. It took a pretty strong mind, however, to adopt an entirely watching attitude, and Dr. Davidson had stuck to the use of pure carbolic, followed by a mild douche. Dr. FRASER LEE suggested that where something was left in the uterus after either an abortion or a confinement it ought to be removed. He never curetted in these cases, but, if there was any suspicion of pieces of placenta being left behind, he always put a hand into the uterus after the confinement. He agreed with Dr. Fordyce as to abortions, and never trusted either the patient or the relatives, who so often insisted that everything had come away. He explored the uterus under an anaesthetic and quite often found pieces of tissue left behind. He used a blunt curette and gave an intrauterine douche and had seen no rise of temperature or sepsis in these cases.

The PRESIDENT remarked that one of the difficulties in treating puerperal sepsis was that of early diagnosis. Intrauterine douching, if used at the commencement of the illness, was of great value, and the application of pure carbolic acid a useful adjunct. Douching used a week or ten days after confinement was of no avail. He entirely agreed with what had been said about curetting in puerperal sepsis. If at the time of confinement it was recognized that a large piece of placenta had been left behind it was justifiable to remove it at once, but if there were only a small piece or some shreds of membrane it was far better to leave them alone. The rigor which occurred after intrauterine douching no doubt indicated bacteriaemia, but it did not seem to do much harm, as the temperature as a rule fell rapidly to normal and continued there. In septic abortion he thought that as much as possible should be removed, without, of course, the use of any sharp instrument. At present he was inclined to continue local treatment in these septic cases, but no doubt the day might come when they would be more satisfactorily treated by vaccines or serums.

Professor WATSON, in reply, said that the ideas he had put forward as to the intrauterine douche were based on actual experience in the hospital with which he had been connected in Toronto, where all forms of sepsis had to be taken in. Almost invariably he had found that when a patient was admitted with puerperal sepsis there was a history of interference with the uterus—possibly it had been curetted during the febrile period. With the intrauterine douche there was a risk of carrying more into the uterus than could ever be got out of it. He considered that as used in private practice the douche was a great source of danger. In a case of abortion, if it were incomplete and the patient had no rise of temperature, the material should be immediately cleared out, but if the temperature rose it was necessary to wait until it fell before clearing out the remains. If in the meantime death occurred it was due to bacteriaemia, which would only have been aggravated by interference.

PLASTIC REPAIR OF THE FACE AND LIMBS.

AT a meeting of the Edinburgh Medico-Chirurgical Society held on March 7th, with the President, Sir R. W. PHILIP, in the chair, Mr. J. J. M. SHAW read a communication upon the plastic repair of the face and limbs, and exhibited a series of lantern slides which illustrated the practice and results of two methods employed—the Thiersch graft upon a mould and the tube pedicle.

After paying a tribute to the influence of Mr. H. D. Gillies in the recent developments in plastic surgery, and to the value of an association with him at Queen's Hospital, Sidcup, Mr. Shaw described the method of applying the Thiersch graft wrapped around the dental composition known as "stent," and showed photographs of illustrative cases indicating its usefulness in ectropion of the eyelids, in adhesions of the labio-gingival sulcus which prevent the fitting of dentures, and as an intranasal lining in deformities caused by lupus, syphilis, and old-standing trauma. Reference was made to the necessity of supplying, in these types of nasal deformity, a new cartilaginous framework, angled at the tip of the nose and supported both at the glabellar region and at the spine of the

maxilla, in addition to the restoration of the lining. In all cases a temporary improvement could be effected by the insertion of a simple straight slip of cartilage, but it was only in a condition of comparatively recent trauma, in which no intranasal lesion of an ulcerative type had existed, that a permanently satisfactory result could be attained by a cartilage which was supported by bone at the upper end only.

The two varieties of tube pedicle grafts, to which were applied the distinguishing names of anastomotic and arterial, were next demonstrated. In the former, most commonly fashioned upon the neck or abdomen, three operative stages were required. The skin tube was first prepared, both ends being left untouched. By daily constriction of the end which was first to be freed, the anastomotic channels of the other end were developed. Three weeks later the pedicle was divided at the end prepared for separation, partially opened out and implanted at a suitable margin of the new bed. After the lapse of another three weeks the remaining original attachment was set free and the pedicle opened throughout its whole length to fill the defect completely. The length and flexibility of the pedicle obviated the need for firm fixation of the parts in the intermediate stage. In the arterial type the operation was carried out in two stages. The most common example was the forehead flap, in which the pedicle contained the anterior branch of the superficial temporal artery. Owing to its dependable viability, the implantation of the freed end on to the face could be effected at once, and a fortnight later the second stage was carried out by the return to the forehead of the proximal part of the pedicle which had served as a conduit. The gap on the forehead, corresponding to the portion of skin which was now implanted on the face, was covered by a whole-thickness skin graft from the abdomen or by local advancements of the scalp. Examples were shown of the treatment by the forehead flap of facial disfigurement due to burns, port-wine stains unsuccessfully dealt with by other means, lupus excision, and gunshot wounds. In chronic ulceration and cicatricial contractures of the arms and hands, the employment of the abdominal anastomotic pedicle was illustrated. In these situations the tube pedicle was considered to be the most effective method of plastic repair. For the lower limbs, the pedicle graft, whether obtained from the sound limb or from the abdomen by successful "caterpillar" stages, was not advocated until it became evident that healing could not be effected by splintage and rest nor by free grafting.

The communication was discussed by Sir HAROLD STILES, Mr. GUTHRIE, Mr. WADE, Mr. STEWART, and Mr. PIRIE WATSON; and Mr. SHAW replied.

Clinical Cases.

Sir DAVID WALLACE showed (1) a case of exophthalmic goitre operated on thirteen months previously. The case had been treated medically for over a year prior to operation without benefit. The operation had been completely successful in relieving symptoms. (2) A case of epithelioma of the tongue in which no recurrence had followed resection of one-half of the tongue two and a half years previously. Dr. DAVIES reported a case of tetany following removal of the right lobe of the thyroid gland; the left lobe had been removed two years previously. The condition was benefiting from large doses of calcium lactate and subcutaneous injection of parathyroid in 1/10-grain doses. Dr. PATERSON showed a case of pulsating exophthalmos from a non-traumatic arterio-venous aneurysm of the cavernous sinus and internal carotid artery. Dr. GOODALL showed a case of severe arthritis deformans, in which benefit had followed weekly intramuscular injections of peptone in 0.2-gram doses.

MENTALLY DEFECTIVE CHILDREN.

A MEETING of the Ulster Medical Society was held in the Medical Institute, Belfast, on March 8th, with Professor JOHNSTONE, President, in the chair.

Dr. W. R. DAWSON, chief medical officer of the Government of Northern Ireland, read a paper on the care and education of mentally defective children. He dealt fully at first with the classification and general pathology. An idiot was unable to guard himself against danger and had a mental equipment not exceeding that of a child of 2 years of age. An imbecile could guard himself against danger but could not earn a livelihood; his mental age lay between 2 and 7. The feeble-minded were permanently incapable of benefiting by education, and there were various subdivisions of this latter division. Dr. Dawson then gave a description of the Darenth Training Colony with its list of occupations, training, classes, and system of education generally. He remarked that it was generally asserted that these children would require life-long control, and so such expenditure was a waste of money; but some did remarkably well, many were greatly improved and were able to help in home work; all these would inevitably drift into public institutions, prisons, workhouses, penitentiaries, asylums, and so would have ultimately to be supported by public money. These homes and training schools minimized the evil; those cases that merely develop late were rescued, vicious tendencies and faulty habits were suppressed, and a certain amount of education, especially manual, was imparted; the children were taught to play, learn some one trade well, and solitariness was avoided. In Scotland the boarding-out system was common under strict supervision; it gave the child a home life and was economical.

Dr. LEE read a paper on the treatment of congenital syphilis, which was based on the results of 20 cases treated in the Children's Hospital. He referred to a large number of the moot points in congenital syphilis, and explained the method of administering the later preparations of salvarsan to infants.

The PRESIDENT raised the question whether sterilization by *x* rays had been practised. Dr. CALWELL referred to the cause of feeble-mindedness; it was not altogether due to alcohol, nor to syphilis, nor yet to heredity, although the latter was the strongest factor. He thought it a pity that the Binet-Simon tests and their modifications were not more commonly and systematically used. The evil was clear; and, as shown by the paper, the remedy was also clear, but the difficulty was finance. He thought an institution was an absolute necessity, but general hospitals should open a mental out-patient department, where all such cases could be seen.

Dr. HOUSTON did not accept all the conclusions of Dr. Lee as regards the syphilitic problems; he asked how far hereditary syphilis was a cause of congenital mental defect. Mr. FULLERTON raised the question of the surgical cure of hydrocephalus by opening the Sylvian duct and otherwise restoring the free circulation of the cerebro-spinal fluid. Professor MACILWAINE said the evening had shown the necessity and advantage of linking up experimental and practical therapeutics. Dr. TRIMBLE said that an intelligent basis of education was necessary, not only in dealing with these children, but in all schools. Dr. DAWSON and Dr. LEE replied.

CAUSE OF DEATH IN INTESTINAL OBSTRUCTION.

A MEETING of the Surgical Section of the Royal Academy of Medicine in Ireland was held on March 9th, with the President, Sir WILLIAM I. DE COURCY WHEELER, in the chair, when Mr. SETON PRINGLE read a communication on the cause of death in intestinal obstruction.

Mr. Seton Pringle, having briefly reviewed the three theories that had been advanced on this question—namely, (1) infection, (2) absorption of toxins from the obstructed intestine, and (3) depletion of the system in circulation and cerebral anaemia—went very fully into the experimental work that had been done by workers in the British Isles, America, and the Continent. From this work two facts confirming clinical experience stood out pre-eminently—peritonitis was not the chief factor in causing death, and the higher up the obstruction the more rapidly was it fatal. In addition he drew the following conclusions: (1) The principal factor in causing death in intestinal obstruction was a toxin which was developed chiefly in the duodenum, and, although not absorbed from normal intestine, was absorbed under the conditions which prevailed in obstruction. (2) The exact chemical composition of the toxin was still under dispute, but it was almost certainly of the nature of one or other of the toxic bodies derived from protein disintegration. (3) The exact mode of production of the toxin was also undecided, but probably the presence of pancreatic secretion, and, in a lesser degree, the activities of bacteria were necessary for its production. (4) While the duodenum was the site of maximum toxicity in obstruction, yet the poisonous substances were developed lower down in the intestine, and it was probable that in the production of these toxins bacterial action played an important part—a part which increased in importance the lower down the obstruction occurred. Mr. Pringle believed that those conclusions for the most

part held true when examined under the searchlight of clinical experience, although at the same time he considered that toxaemia was rarely the only factor in causing death, and that shock was one which played a more important part than the literature would lead them to believe. He suggested that intestinal toxaemia had a large share in causing death in acute septic peritonitis, together with the factors of shock and septic absorption from the peritoneum. Arguing that if the shock were combated there was a possibility of prolonging the patient's life sufficiently to enable the fighting powers of the peritoneum to deal with the infection, he urged not only the use of morphine and saline-glucose infusions to cope with the shock and toxaemia, but also strongly advocated a direct attack on the sources of the toxin by means of an enterostomy high up in the small intestine, after the manner of a Witzel's gastrostomy. The technique of the operation was described in detail, and Mr. Pringle said that most encouraging results had been obtained by adopting this line of treatment in such cases.

Mr. W. DOOLIN thought that the toxaemic factor was the main one. He had never seen a case in which the patient died of shock within twenty-four or forty-eight hours; in fact, in the cases he had seen it had seemed extraordinary the length of time the patient lived in spite of the intestinal obstruction. Mr. HENRY STOKES was of opinion that primary shock was rarely responsible for death in intestinal obstruction. He thought that shock was brought on more or less gradually, by toxins and loss of blood, and in such a case there would be no dilatation of the vessels. Mr. ADAMS MCCONNELL also spoke. The PRESIDENT expressed the opinion that in cases of intestinal obstruction a patient's power of getting rid of toxins was increased, and the stomach became an excretory organ. In these cases lavage of the stomach should be carried out every two hours. Frequently such cases were treated by giving pituitary extract and enemas, but he thought that there came a stage when that treatment was wrong, and when enemas should be stopped, morphine given, and the stomach frequently washed out. If morphine was given for two days or so the patient's bowels began to act, diarrhoea often set in, and thus toxins were got rid of. That bore out how much shock had to do with these cases. He was of opinion that stimulants were contraindicated, and that sometimes in acute cases, unless morphine was given, the patient would die.

Mr. W. C. STEVENSON then read a report on 132 patients treated with radium emanations during 1922, and showed two male patients who had been treated with radium emanations during 1922. The PRESIDENT showed a specimen of a renal squamous-celled epithelioma from a patient who had four stones in the kidney. In the published cases of primary cancer in the kidney a considerable percentage had stones in the kidney, which looked as if stone was an important factor in the production of cancer in the kidney.

HEART-BLOCK.

AT a meeting of the Manchester Medical Society held on March 7th, with Sir WILLIAM MILLIGAN in the chair, Dr. J. C. BRAMWELL read a paper on some aspects of heart-block. He said the introduction of the electro-cardiographic method had thrown much light on the mechanism of the heart beat and the disorders to which that mechanism was subject in disease. Some of the more recent work in particular had an important practical application to the clinical problem of prognosis. In its mildest form heart-block was characterized by a prolongation of the interval which elapsed between the contraction of the auricle and ventricle. It differed therefore only in degree from the normal mechanism, which served to prevent simultaneous contraction of these two chambers, such as occurred in some cases of "nodal rhythm." In addition to the more familiar forms of partial and complete block, lesions of one or other of the main branches of the *a-v* bundle gave rise to characteristic alterations in the ventricular complex of the electro-cardiogram. This was because the excitation wave was forced to pursue an abnormal course and was delayed in its passage to the affected ventricle. In certain cases of grave myocardial disease a form of electrocardiogram was met with which resembled that of branch bundle lesions in the increased duration of the initial ventricular deflections, but differed from the latter in its smaller amplitude and in a peculiar notching of the O.R.S. group. Rothschild and Oppenheimer considered this type of electrocardiogram characteristic of a lesion affecting the terminal arborizations of the Purkinje system. Whether this hypothesis would ultimately prove to be correct was uncertain, but the records of this type were undoubtedly of grave prognostic significance. Complete heart-block was frequently compatible with a comparatively active life, and it was usually during the transition stages before complete heart-block had been finally established that syncopal attacks were most liable to occur. During periods of severe and repeated Stokes-Adams seizures the prognosis might appear to be wellnigh hopeless, but in many of these patients the attacks subsequently disappeared completely, or became less frequent, and a surprising degree of recovery was attained. In certain cases of cardiac irregularity the normal heart rhythm was interrupted by long pauses. On account of its resemblance to *a-v* block this condition had been termed "sino-auricular block," on the hypothesis that the excitation wave arises in the *s-a* node but fails to reach the auricle. This hypothesis was likely to require modification in the light of further knowledge, but served for the present to bring the condition into line with the more familiar forms of cardiac arrhythmia.

Dr. Bramwell's paper was illustrated by electro-cardiographic records from patients treated in the Manchester Royal Infirmary during the past three years, whose after-histories had been followed up to the present time.

THE DERMATOLOGIST AS DETECTIVE.

A MEETING of the Sheffield Medico-Chirurgical Society was held on February 27th, with Dr. R. HALLAM in the chair, when Sir NORMAN WALKER read a paper entitled "The detective spirit in the diagnosis of skin diseases." As a suitable text for his subject he selected the words from Job: "The cause that I knew not I searched out." In his student days dermatology, he said, had reached the stage of observation and collection of facts. Bacteriology was then in its infancy. Many diseases then attributed to "gouty" or "nervous" conditions were now attributed to definite organisms. The method of inquiry was important. The patient should be encouraged to tell his own story. Questions should be put in such a way that it was equally easy for him to answer yes or no. The skin more than any other organ of the body, except perhaps the stomach, was subject to idiosyncrasy. Just as surgeons had personal idiosyncrasies in the way their skins reacted to antiseptic lotions, so people generally showed marked personal peculiarities of irritability to special varieties of soap. Other cases of dermatitis had been traced to feather boas cleaned with a soap powder, or furs cleaned with formalin. In regard to occupation, it is important to find out exactly what a man did. A patient, for example, who said he was a "telegraphist" was found to be a cleaner of instruments, for which he used turpentine. Certain woods, notably teak and satinwood, were liable to cause irritation in some persons; various plants, such as the *Primula obconica* and *Rhus toxicodendron*; in others cosmetics, hair dyes, and quack ointments were also frequent offenders. The lecturer concluded with the advice, "Seek till ye find. Seek and ye shall find." A vote of thanks was proposed by Professor ARTHUR HALL, and seconded by Dr. E. F. SKINNER.

NAVAL, MILITARY, AND AIR FORCE HYGIENE.

BY permission of the Medical Research Council and the Officer Commanding R.A.F. Medical Units, Hampstead, a meeting of the Naval, Military, and Air Force Hygiene Group of the Society of Medical Officers of Health was held at the National Institute for Medical Research, Mount Vernon, Hampstead, on March 19th, with the President, Major-General Sir WILLIAM MACPHERSON, in the chair. Descriptions and demonstrations were given of (1) the katathermometer and recent modifications, (2) silicosis, (3) a new dark-ground illuminator, (4) methods of selection of flying personnel.

Dr. LEONARD HILL briefly described the katathermometer and emphasized its great value in dealing with problems of ventilation. He showed that the mortality rate in factories, laundries, etc., with bad katathermometer readings was invariably high. In South African mines with bad readings a great loss of labour efficiency was found which could be remedied by improving the harmful conditions. In temperate climates the dry katathermometer was important; but in the tropics the wet katathermometer, which indicated the condition of the sweating body, was of greater value. The practical bearing of this work upon heat-stroke, labour conditions, healthy exercise, and sedentary occupations had been amply demonstrated in recent experience. Dr. SCHUSTER then

demonstrated a recent modification of the katathermometer enabling a record of the readings to be kept.

Dr. PURDY gave a demonstration of slides illustrative of silicosis. He called attention to the recent work on this subject, more especially with regard to its relationship to pulmonary tuberculosis. He showed that colloidal silica had a destructive action on endothelial cells from which the phagocytes were derived.

Mr. J. E. BARNARD demonstrated a new dark-ground illuminator of sufficiently high angle to permit the use of an objective of 1 to 2 N.A. The improvement in the image and increased resolution were demonstrated by means of specimens of *Leptospira ictero-haemorrhagiae*.

Group Captain H. M. FLACK described the methods of selection of flying personnel. The system was devised to answer the three fundamental questions: (1) Can the candidate learn to fly? (2) Will he be able to stand (*a*) the nerve strain, (*b*) the diminished oxygen tension? (3) Has he a suitable disposition for this class of combatant work? No. 3 was supplementary, and not an integral part of the medical examination. The various physiological tests employed were described in some detail, and their application in determining the answers to the above questions was explained.

ENDOCRINES AND PSYCHONEUROSES.

AT a meeting of the West Kent Medico-Chirurgical Society held on March 9th at the Miller General Hospital, Greenwich, with Dr. J. P. PURVIS in the chair, Dr. W. LANGDON BROWN gave a lecture on the influence of the endocrines in the psychoneuroses. He said that response to chemical stimuli was the most primitive form of defence in animals, and this was shown in the queen bee; at a certain stage of development she was strongly heliotropic, but the immediate effect of fertilization was to destroy this heliotropism and she sought the shelter of the hive. Internal secretions regulated instinctive behaviour. So it was with human beings—the instinctive behaviour of a young man in the presence of the opposite sex depended mainly on the state of his endocrine system. The activities of the endocrine glands were correlated to a large extent through the nervous system. The sympathetic system co-operated with the adrenals, thyroid, and pituitary, the parasympathetic mainly with the glands of the digestive organs and their annexes. The influences leading to hyperthyroidism might be classified under the headings of nutritional, toxic, and psychic: lack of vitamins led to diminished thyroid secretions; tonsillar sepsis and intestinal sepsis were apt to produce thyroid enlargement; and in Graves's disease the psychic factor played a large part. In the war, officers with more responsibility developed neuroses, while privates more commonly developed hysterical paralyses and mutism. Excitement and emotion caused glycosuria, especially in Jews. Fear was a perversion of the defensive mechanism of the body. The adrenals were fighting glands and made aggressive persons. In pituitary disturbance walking and talking developed late; the fat boy in *Pickwick*, in his sleepiness and his desire to make people's flesh creep, was an example of pituitary disturbance. The thyroid gland was the creator—child-bearers and artists never had myxoedema. Graves's disease increased after the air raids in London and after the San Francisco earthquake. Hypothyroidism tended to produce a resigned melancholy. In a case of acute mania which developed in a man suffering from myxoedema the mania passed off when thyroid treatment was resumed. If the gonads developed early there was an example of a precocious child.

ANTE-NATAL DIAGNOSIS.

THE monthly meeting of the London Association of the Medical Women's Federation was held at the Elizabeth Garrett Anderson Hospital on March 13th, with the President, Dr. LOUISA MARTINDALE, in the chair. After preliminary business Dr. FRANCES HUXLEY read a paper entitled "Ante-natal diagnosis," in which she detailed the clinical signs of pregnancy and the dates at which they could usually be detected. She then described the various "grips" which she is in the habit of using for estimating the size of the pelvis, the lie of the child, and the relation between the size of the head and the pelvis. She discussed the date of engagement of the head in primigravidae and multigravidae respectively, and emphasized the importance of estimating the size of the foetus as the best guide to its maturity. In discussing the lie of the foetus she pointed out some of the dangers and difficulties in doing version in breech presentations, and remarked that the site of maximum intensity of the foetal heart was generally to be found below the umbilicus in such cases, rather than above, as was usually taught. A discussion followed, in which Lady BARRETT, Professor MCILROY, Dr. RORKE, Dr. RUSSELL, and others took part.

Reviews.

PHARMACOLOGY AND CLINICAL MEDICINE.

PHARMACOLOGY has sometimes been defined as the action of drugs on normal tissues and organisms. In reality it embodies much more than this, for it embraces the synthesis of new chemical compounds with a view to their use in medicine—a branch hardly existing in this country—and our knowledge of the scientific employment of drugs in the sick-room. Pharmacology, however, is never conceived or taught as a pure science, but always, directly or indirectly in relation to the patient, as the science of treatment. Professor CLARK, in a bright and interesting little book, adopts as his title *Applied Pharmacology*.[1] In writing it his object was to bridge the gap between pharmacology and therapeutics, which he thinks is too great for the student in this country to pass unaided. As matters stand at present it may be that such a gap exists, but there can be no gap if the subject is taught in the laboratory and ward at the same period of the student's curriculum, whether by the same or different professors. This is the policy universally advocated by all teachers in the subject.

Therapeutics embraces all treatment of diseased persons, whether it be based on experimental pharmacology or be no more than a remnant of folklore and mere empiricism; applied pharmacology, then, should refer to that portion of therapeutics which is based on pharmacology.

Professor Clark's book is an admirable account of certain of the salient features of the action of drugs in health and disease, but the word "applied" is really unnecessary since pharmacology is an applied science. How can descriptions of the action of morphine and strychnine, of purgatives and other drugs, be applied unless precise directions are given for their employment and for their administration under definite conditions? On the other hand, therapeutics, like politics, is not governed by a set of principles for general observance; it is still an art.

Professor Clark's book contains twenty-seven chapters. Classification in pharmacology always presents difficulties. One of two methods is adopted: either Schmiedeberg's classification into groups of substances exerting certain actions in common, or a classification according to the organs on which the drugs act. Professor Clark adopts the latter method, and his chapters deal with the action of drugs on the heart, kidney, respiration, and so on. Nevertheless, no simple classification will suffice, and separate chapters are given to alcohol, anaesthetics, disinfectants, and local anaesthetics: it is a little difficult to understand why emetine and the salicylates are included in one group, since they are in no way related the one to the other.

The book is written in an interesting fashion and is entirely free from dogmas, a feature which in our opinion makes only for good, though the modern student has a passion for his memorizing to be precise and his knowledge to be tabulated. Particularly admirable are the chapters on vitamins, radiations immunity, and the pharmacological standardization of drugs. This book is not, I believe, intended to present a full account of treatment. It does not deal with counter-irritation, the homely poultice or camphorated oil, nor with colchicum and the essential oils; phenacetin is dealt with only in so far as it lowers temperature, a purpose for which it is not used in clinical medicine.

Professor Clark's book contains the groundwork of the rationale of treatment; it makes delightful reading and should prove of great interest to all those who treat the sick. It is the kind of book which may be picked up at odd moments and a chapter perused with interest and profit. For unless the physician has a firm grasp of the great biological truths underlying physiology and pharmacology, notwithstanding all progress in scientific medicine, he must remain an empiric. Huxley writing nearly thirty years ago said: "There is no more hopeful indication of the progress of medicine towards the ideal of Descartes than is to be derived from a comparison of the state of pharmacology at the present day with that which existed forty years ago." Clark's book is the story of the advance since that time, and the story is well told.

W. E. DIXON.

[1] *Applied Pharmacology*. By A. J. Clark (M.C.), B.A., M.D., F.R.C.P. London: J. and A. Churchill. 1923. (Demy 8vo; pp. viii + 390; 47 figures. 15s. net.)

CHARLES WHITE AND PUERPERAL FEVER.

DR. LLOYD ROBERTS will be remembered for his professional skill and for his ability not only to adapt himself to scientific progress made by others but definitely to advance such progress himself. In support of this statement it is only necessary to mention that he performed his first Caesarean section in 1867, when the mortality was 90 per cent., and his last four sections, all successful, in 1907–8. He was a great lover of old medical books, and the collection he bequeathed to the Royal College of Physicians of London was the most important its library had received since the magnificent gift of the Marquess of Dorchester's library in the seventeenth century. The memory of Lloyd Roberts will be kept alive by this gift, and also by the bequest of £500 to the Manchester Royal Infirmary to provide an annual honorarium for a Lloyd Roberts lecturer. He had worked at the Infirmary for twenty-five years and bequeathed to it a sum of £3,000. To deliver the first Lloyd Roberts lecture the trustees chose Dr. J. G. Adami, F.R.S., Vice-Chancellor of the University of Liverpool, who, remembering that Dr. Lloyd Roberts had given an address on the Manchester School of Obstetrics in 1903, chose that subject, but limited his lecture to the efforts of Charles White to prevent puerperal fever. The lecture has now, with certain additions, been published in a volume.[2]

Charles White (1728–1813) was a student under William Hunter in 1748 and was a friend of his brother John Hunter. He was founder and chief surgeon of the new Manchester Infirmary, where he practised surgery and obstetrics for thirty-eight years. Dr. Adami draws special attention to Dr. White's book on *The Management of Pregnant and Lying-in Women, and the means of curing, and especially of preventing the principal disorders to which they are liable*, and more especially to his remarks on self-infection in puerperal fever. This treatise, which was first published in 1773, went through five editions, was translated into French and German, and was reprinted in U.S.A. in 1793. Dr. Adami finds serious fault with the late Sir William Sinclair, who was professor of obstetrics in Manchester, because, when writing his *Life and Doctrine of Semmelweis* in 1909, he should have so minimized Dr. White's book that all the credit is given to Semmelweis. Sinclair, Dr. Adami says,

> did not recognize "that practically all that Semmelweis accomplished was to demonstrate absolutely that the earlier English methods had been on sound lines (and had been introduced into the Vienna Lying-in Hospital in 1789 by Professor Boër, who had studied in England), and that reversion to those methods brought about a rapid reduction of mortality; and that the main cause of the appalling incidence of puerperal fever in the Vienna lying-in hospitals was want of cleanliness, and especially the practice of allowing students after they had come straight from the *post-mortem* room to examine patients without first adequately cleansing their hands. He admitted other modes of infection such as neglect to employ clean bed linen, the presence of open suppurating wounds in neighbouring beds, and self-infection—that is to say, the lochia, remnants of decidua, and blood coagula which are retained may undergo decomposition and when absorption occurs produce puerperal fever."

It may, however, be pointed out that Semmelweis was dealing mainly with the modes of infection of lying-in women from without by septic hands and instruments, whilst Charles White had dealt chiefly with auto-infection or with environmental infection arising "from foul air, filthy bedding, associated with the retention of lochia and the excreta, which in his opinion were the primary causes of puerperal fever, and he realized that when this was once developed it could be conveyed to other women."

It looks as if Charles White (1773) and Semmelweis (1843) were emphasizing two different ways of preventing puerperal fever, the former teaching that most cases were due to autogenetic putridity and to passive unclean environment, whilst the latter, seventy years afterwards, discovered that it was mainly the direct conveyance of septic products from without into the areas where lochia and blood and placental débris accumulated which encouraged the spread of putridity. If the existence of streptococci had been known to these two observers, the importance of auto-infection would have been largely limited, and the danger of direct infection by unclean agents would have been more readily understood and accepted in this country, where the views of Semmelweis were first made known by the late Dr. C. H. F. Routh in a paper read at the Royal Medico-Chirurgical Society in 1848 (*Transactions*, 1849).

Charles White never lost a patient under his own care in natural labour from puerperal fever, and strictly limits his statement by excluding "cases requiring the use of instruments and cases of floodings or convulsions, or cases to which he had been called into consultation." If he had realized and described more fully the risks of infection from unclean instruments and hands he would have saved many lives in the seventy years between his time and that of Semmelweis, though it is probable that White's prophylactic views carried much more weight than Sinclair thought possible, for, as Dr. Adami says, Boër, professor of midwifery in Vienna between 1789 and 1819, had reduced puerperal mortality to 0.8 per cent. in his last year by methods which he had learnt in England. Boër's successor, Klein, was less successful, and his mortality rose to 7.8 per cent. in his first year, and to 10 per cent. between 1841 and 1846; it was not till Semmelweis discovered the great danger of direct infection by examining women during and after labour with septic hands that the value of White's teaching and his own practice of clean contact could be usefully combined.

Dr. Adami has done well to lead us back to Charles White's steps in the direction of aseptic midwifery and to reprint in the appendix much that Charles White wrote in his book. This has increased the value of his address, which should be read by all interested in obstetrics, and especially by those who deplore the persistence of puerperal mortality from sepsis. In 1919 the puerperal death rate was greater in England and Wales than in any other year since 1905; this the Registrar-General stated was "preponderantly due to septic disease," for of the 3,204 deaths assigned to "pregnancy and childbirth," 1,208, or 37 per cent., were due to puerperal infection.

OPOTHERAPY IN EXCELSIS.

DR. L. LEMATTE, in *L'Opothérapie du Praticien*,[3] gives an account of the method of preparation, dose, mode of administration, and therapeutic use of a very wide variety of extracts of organs. The method of preparation consists in making a glycerin extract of the macerated organ, filtering, and then sterilizing with ultra-violet light. Directions are given for the administration of the product by mouth, by rectum, or by hypodermic injection. Accounts are given of the therapeutic use of extracts made from the brain, the thyroids, the parathyroids, the thymus, the pituitary, the kidneys, the suprarenals, the prostate, the testicles, the ovaries, the placenta, the mammary glands, the liver, the bile, the heart, the lungs, the spleen, the lymph glands, the marrow of bones, the stomach, and the gut.

A therapeutic index of five pages is supplied. A study of this index shows that opotherapy has the great advantage of simplicity, for adenitis is treated by extract of lymph glands, albuminuria by extract of kidneys, amenorrhoea by extract of ovaries, bronchitis by extract of lungs, cardiopathies by extract of heart, and constipation by extract of the gut. It seems only logical to suggest a further simplification, already partly achieved by polyglandular therapy: why not mince up and extract the entire animal, and the product should surely be the long-sought-for elixir of life?

The author in his preface states that since the book is written for practitioners no attempt is made to give an account of the theories which attempt to explain the action of the organs dealt with. This is rather a doubtful compliment to medical practitioners, and we think that the book would have been improved if rather more substantial evidence had been adduced to show that nine-tenths of the extracts considered have any therapeutic action whatsoever.

THE PIRQUET SYSTEM OF INFANT FEEDING.

IN a pamphlet of seventy-four pages entitled "The feeding of healthy and sick children" Dr. EDMUND NOBEL of the University Children's Clinic in Vienna has made a painstaking attempt to explain the principles of the Pirquet system of feeding.[4]

As an exponent and teacher of this system since its introduction by Dr. Clemens Pirquet during the war as an educational and economic measure Dr. Nobel ought to be in

[2] *Charles White, of Manchester (1728–1813), and the Arrest of Puerperal Fever.* Being the Lloyd Roberts Lecture, Manchester Royal Infirmary, 1921. By J. George Adami, C.B.E., M.D., F.R.S. With which are reprinted Charles White's published writings upon Puerperal Fever. Liverpool: The University Press of Liverpool, Ltd.; London: Hodder and Stoughton, Ltd. 1922. (Demy 8vo, pp. 142; 4 plates. 8s. net.)

[3] *L'Opothérapie du Praticien.* By Dr. L. Lematte. Paris: A. Maloine et Fils. 1922. (Cr. 8vo, pp. 238; illustrated. Fr. 5.)

[4] *Die Ernährung Gesunder und Kranker Kinder.* By Privatdozent Dr. Edmund Nobel. Vienna, Leipzig, Munich: Rikola. 1923. (Roy. 8vo, pp. 74; 11 figures.)

a position, if anybody is, to explain its principles and advantages. Dr. Pirquet was not satisfied that the old method of estimating and expressing food values in terms of calories was sufficiently simple to be comprehended by the lay public, and since it was a matter of vital importance to the nation that the Austrian people should realize the meaning of food values and a subsistence diet he invented his system and the unit of energy value which he called the "nem," in place of the old familiar calorie.

The word "nem" is compounded of the initials of the three words Nahrung, Einheit, Milch, and expresses the food value of 1 gram of average breast milk, which according to our reckoning is about 0.7 of a calorie. He has also coined the words decanem, hektonem, kilonem, decinem, centinem, etc., to express the value of 10, 100, 1,000 grams and 1/10 and 1/100 of a gram of milk respectively.

For our part we cannot understand why it should be considered easier to grasp the food values of different articles of diet in terms of "nems" than in terms of calories, but we are informed that it has been rendered possible by their means to enable quite young children to take an intelligent interest in the adjustment of their food intake to their physiological requirement. This may be so, but it would be equally possible to make them understand the same thing if the food values were expressed in calories and the system were sufficiently explained.

Pirquet's system has the further eccentricity that it does not recognize the weight of the child as a criterion of its food requirements, as we are accustomed to do in accordance with Rubner's original teaching; the Viennese innovation regards the sitting height (Sitzhöhe) as a more practical index. Pirquet estimates that the square of the sitting height expressed in centimetres gives the number of "nems" required in the twenty-four hours. To give an example: A child with a sitting height of 40 cm. requires 1,600 "nems" (40×40) in the twenty-four hours. Pirquet evidently recognizes that neither "sitting height" nor weight can give a correct measure of a child's food requirements, for he explains and defines very carefully the maximum, minimum, optimum, and balanced (aequum) requirements under individual and particular circumstances. The minimum requirement is what we understand by the requirements of basal metabolism; the maximum he defines as the most a child can take without becoming actually ill—a very poor definition, in our opinion, as it leaves out of consideration the factor of time. The optimum is about two-thirds of the maximum.

It is perhaps unnecessary to follow Dr. Nobel's interpretations farther than this so far as concerns the feeding of healthy children. The system is not likely to become popular in this country, and the fact that "balance" is taken very little into account beyond recognizing that the protein percentage of breast milk should be the standard throughout childhood—that is, about one-tenth of the total food value—will at once prejudice the system in the eyes of the medical profession on this side of the Channel. Moreover, it is hardly in conformity with the views of the majority of dietists to hold that fat and carbohydrates are interchangeable equivalents. Fats appear to have some nutritional value quite apart from their value as combustible material—perhaps as base carriers or vehicles for the fat-soluble A factor—and cannot be indefinitely replaced by carbohydrates.

In this latter connexion we are glad to note that Dr. Pirquet's system makes acknowledgement of the value of the accessory factors, a fact which bears testimony to the usefulness of the work of the Lister Institute's mission to Vienna, which was very largely for the purpose of instructing the distressful country, of which Vienna is the capital, in the newer knowledge of nutrition and the part taken by the accessory factors in scientific dietetics.

PSYCHO-ANALYSIS.

THE volume entitled *Introductory Lectures on Psycho-analysis*[5] consists of a translation, carefully made by Mrs. Joan Riviere, of a series of addresses delivered by Professor SIGMUND FREUD at the University of Vienna, which, as we recently had occasion to state, have reached a fourth edition in German. They provide the most comprehensive account of the subject which has yet appeared, and the book is the best with which to commence the study of psycho-analysis. The reader cannot fail to be impressed by the ability and honesty of its writer, and by his untiring energy in seeking to unravel the motives which determine human behaviour. The style of the book is conversational, and as he proceeds the author anticipates and meets objections which may be made to his views.

The latter portion of the book, in which Professor Freud outlines his general theory of the neuroses, will be read with particular interest. There is no suggestion of finality in his treatment of the subject, for every fresh fact creates a fresh problem. Though Freud's investigations have led him to ascribe the symptoms of the neuroses to disturbances in the sexual impulse, he recognizes that the factors responsible for this state of affairs are extremely complex and variable. Some, he admits, are not preventable, and he lays stress on the influence of the inherent sexual constitution in the production of nervous symptoms. The possibilities of prevention of the neuroses by early intervention in the matter of the child's sexual development are discussed with reserve. Professor Freud holds that the value of strict supervision in childhood is small because it is helpless against the constitutional factor; that it is less easy to carry out than specialists in education imagine; that it favours an exaggerated degree of sexual repression which is harmful in its effects; and that it sends the child into life without power to resist the urgent demands of his sexuality that must be expected at puberty. Professor Freud exhibits no disposition to assume the part of a social reformer by applying the knowledge he has gained of the individual to the reconstruction of society; he is always the observer, rather than the critic or mentor. As an observer he is too acute to assume that the neuroses are the product of unfavourable external conditions of life, though these of course have their influence. He holds that though sexual deprivation ("absence of love in life"), which modern social conditions tend to impose on many people, is responsible for much unhappiness, abstinence in itself is an infrequent causal factor in the neuroses. Professor Freud has not simplified the problem of the neuroses; he makes evident his opinion that the conditions responsible are extremely intricate, and that neither their prevention nor cure is a simple matter. He certainly dissipates the myth that either marriage or "free living" will have the effect of curing a neurosis.

In these lectures Professor Freud has raised a number of problems which it will take many years to solve. His own views have been largely modified as a result of his further investigations, and it is difficult to foretell the ultimate fate of his complex theories. There can be no doubt, however, that he has made contributions of permanent value to psychology, and has enriched our knowledge of ourselves and other people.

[5] *Introductory Lectures on Psycho-analysis.* By Professor Sigm. Freud, M.D., LL.D., Vienna. Authorized English translation by Joan Riviere. With a preface by Ernest Jones, M.D. London: George Allen and Unwin, Ltd. 1922. (Demy 8vo, pp. 395; 1 illustration, 18s. net.)

THEORIES ABOUT CANCER.

DR. DUNCAN BULKLEY states that the scope of his volume, *Cancer and its Non-surgical Treatment*,[6] has been widened beyond his original intention, so that in addition to therapeutic considerations it deals with such divergent matters as the geographical distribution of cancer, civilization and cancer, and the biochemistry of cancer; it is in these, which may be called extraneous chapters, that the main interest of the volume lies.

The author begins with an attempt to describe the nature of cancer, but beyond the reiteration of a number of well accepted platitudes there is nothing of any value in this section. Under what is termed the positive results of laboratory investigation a statement is made which seems to be misleading. "The blood in advancing cancer," he says, "has repeatedly been shown to exhibit many manifest changes which indicate vital alterations in the action of the organs which form blood and so control the nutrition of the body and its cells." The fact, however, is that though the condition of the blood in cancer has received the most searching investigation nothing beyond the variation of a secondary anaemia has been discovered. Possibly a secondary anaemia is all that Dr. Bulkley intends to express, but if so the passage suggests the employment of a method, acceptable perhaps in the art of diplomacy, but never permissible in the science of medicine—the method of disguising a very simple statement of fact by a confusing complexity of words. Throughout the volume a tendency to this fault appears.

[6] *Cancer and its Non-surgical Treatment.* By L. Duncan Bulkley, A.M., M.D. New York: W. Wood and Co. 1921. (Med. 8vo, pp. viii + 457; illustrated. 6 dollars.)

Dr. Bulkley makes the dogmatic statement that laboratory experiments have negatived the view that cancer is in its beginnings local; to us it seems that recent experimental work has tended to lay stress upon the influence of local irritants in certain forms of epithelial cancer, and it is actually upon this very point that the hypothesis Dr. Bulkley has set up may be shown to be untenable.

The chapters which deal with the frequency and the geographical distribution of cancer are interesting from the statistical point of view. The subject-matter is sound; much of it has been derived from F. L. Hoffmann's monumental work on the mortality of cancer throughout the world.

Dr. Bulkley draws attention to the apparently increased incidence of cancer in relation to civilization. There would seem to be little doubt about the accuracy of this observation, but to draw from it the conclusion that cancer is a disease of hypernutrition is not logically sound; it is only one possibility in a very complex problem. The section which deals with the histopathology of the disease is disappointing; much of what is stated has been derived from various authorities, but the abstracts are not given in sufficient detail to retain their original value. The account of the biochemistry is even more unsatisfactory; the discussion is introduced by the following statement: "But there is no mystery in the disease, and the real cancer problem is cleared up when we study the biochemistry of the disease." The reader begins to feel that he is on the brink of the solution of a problem which has hitherto defied investigators, and follows page after page with the closest attention, to find the subject left obscure, unless he is prepared to accept the view that cancer is a disease of deranged nutrition.

The plan followed by the author in the medical treatment of malignant disease is a combination of dietetic, hygienic, and medical measures. The dietetic part of the plan resolves itself into a vegetable diet, and menus are given for six days. The hygienic instructions are accurate and sensible, and insistence is very properly laid on the importance of a sufficiency of sleep. The medical treatment includes the use of such remedies as will incite the various organs to form and to eliminate effete elements. Where individual drugs are concerned potassium acetate appears to be that to which Dr. Bulkley attaches most importance. Various local applications are mentioned.

The volume expresses the views of a man who most implicitly believes and as faithfully practises the theories he sets out. Such a production is always interesting, but in this instance we must regretfully say that it has thrown no light upon the dark problem of malignant disease. We trust that it may not do actual harm by raising false hopes and so delaying the only treatment which so far has proved efficient—at least in the early stages of the disease.

FUCHS'S "OPHTHALMOLOGY."

THOSE of us who began the study of ophthalmology on one of the earlier editions of FUCHS's textbook will hardly recognize the new edition.[7] The translator has had the advantage of consultation with Professor Fuchs, and he has incorporated much matter from the thirteenth German edition, which has been prepared by Salzmann but has not yet appeared in print.

Among other changes, the section on hemianopia has been placed under disorders of the visual field, instead of, as heretofore, in the section on the optic nerve; while motor affections of the iris and ptosis have been transferred to the section on motor anomalies from their places in previous editions in the iris and lid sections respectively.

The chapters on refraction have been much enlarged and recent work on such subjects as perimetry and colour sense has been inserted; heredity is more fully discussed. Gullstrand's work on astigmatism, the cardinal points of lenses and the eye all find mention, and there is a revised table of accommodation.

The sections dealing with special diseases have been brought up to date by the incorporation of much new matter, particularly in trachoma, inclusion blennorrhoea, ulcus serpens, iritis, and glaucoma—in fact, every page in this part has been revised and added to. The section on operations is improved by the addition of much recent work. In spite of these rather radical changes, the translator hopes that he has preserved the spirit and where possible the words of Professor Fuchs and thereby maintained the standard set by the author. How far he has succeeded, it is difficult for one to say who made acquaintance with the book in a much earlier and less cumbersome edition, especially as the reviewer has not seen a recent German edition. We can honestly say that little seems to have been omitted; the work as it now stands forms a very complete textbook of ophthalmology, and as such will be very useful to the higher student of the subject. The book is so bulky that the publishers would have done well to issue it in two volumes.

[7] *Textbook of Ophthalmology.* By H. E. Fuchs. Authorized translation from the twelfth German edition, revised and enlarged by Alexander Duane, M.D. Seventh edition. Philadelphia and London: J. B. Lippincott Company. 1923. (Med. 8vo, pp. xv + 997; 455 figures. 42s. net.)

TREATMENT OF GONORRHOEA.

THE third edition of the English translation of LUYS's *Textbook of Gonorrhoea*[8] remains unchanged in its general character. Its author is an enthusiastic advocate of urethroscopic treatment in gonorrhoea, not only in lesions of the anterior but also in those of the posterior urethra. In Luys's opinion, in every case of chronic inflammation of the urethra, whether symptoms point to lesions of the posterior portion or not, posterior urethroscopy should be carried out. The inspection should be very thorough, beginning at the neck of the bladder—paying special attention to the prostatic fossette—and ending at the meatus. By those accustomed to use other forms of posterior urethroscopes than Luys's such a piece of advice will not be well received, for the passage of a posterior urethroscope is an ordeal to which the average patient will not readily submit. However, Luys's posterior urethroscope has the advantage of passing very readily, and the discomfort experienced by the patient is comparatively trifling. As a set-off to its advantage it must be admitted that the view it furnishes, at any rate in the hands of the average observer, is inferior to that provided by other instruments.

In the chapter dealing with gonococcal epididymitis the use of injections of electrargol is strongly advocated. Luys claims that the drug has a powerful curative effect and immediately hastens resolution. He admits, however, as a drawback to the injection, that there is a temporary increase of tension and of pain, especially when infiltration is present. This drawback to electrargol injections would appear to be a very real one, since it is the rule for gonococcal epididymitis to clear up without any accidents.

An addition to the chapter on inflammation of the urethra due to other causes than the gonococcus is a section on urethritis due to *B. coli*. The author claims to have discovered a relation between a hypertrophic lengthening of the prostatic fossette and the liability to this type of urethritis. Owing to this lengthening of the fossa complete evacuation by micturition no longer takes place and infection of the stagnating urine is liable to occur. Vaccine therapy would appear to have given good results in his hands.

Additional plates and illustrations have been added in the third edition.

[8] *A Textbook of Gonorrhoea and its Complications.* By Dr. G. Luys. Translated and edited by A. Foerster, M.R.C.S., L.R.C.P.Lond. Third revised edition. London: Baillière, Tindall, and Cox. 1922. (Roy. 8vo, pp. xvi + 401; 5 plates, 212 figures. 21s. net.)

NOTES ON BOOKS.

IF in England in Elizabethan and Restoration days, cuckoldom was the standing subject of jokes, in France it was quite eclipsed by the enema syringe and the clyster. The *Joyeux Propos d'Esculape*,[9] by Drs. CABANÈS and WITKOWSKI, consists in great part of a study of French history and literature dealing with the use of what at first was known as a clyster, later as a lavement, and latest as a remède. Though this faecal kind of humour makes no strong appeal to the English mind, nevertheless many of the facts recorded, which show the extraordinary vogue of the enema among the French, are of interest in the history of medicine. The plays of Molière contain many allusions to this subject, and in the *Malade Imaginaire* the opening scene discloses Argan seated upon a close-stool. This indeed is hardly surprising when we remember that the King of France received members of his court under similar conditions, and that the Duchess of Burgundy had an enema administered in the very sitting-room of Louis XIV when only partly hidden by a screen. Of Henry IV of France and Navarre it is recorded that in one year he received 212 lavements, 215 purges, and was bled 47 times. It may be doubtful whether the excessive use of lavage of the lower bowel was as common among the lower orders as it was among the nobility,

[9] *Joyeux Propos d'Esculape.* By Drs. Cabanès and Witkowski. Paris: Librairie E. Le François. 1922. (Imp. 16mo, pp. 308; 47 figures. Fr. 9.)

but it appears that a record exists of a suit brought in the seventeenth century by a nurse against a Canon of Troyes for payment of her fees for the administration during two years of 2,190 clysters, and it is certain that up to a very recent period the appearance in a French farce of an apothecary with a pantomimic syringe was sure to provoke roars of laughter. The subject is illustrated by a number of bad reproductions of old plates and of some modern ones, in which the basest part of the human body is much in evidence. The article entitled "Clysteriana" occupies a large part of the volume, which also contains a number of anecdotes more or less medical and less rather than more humorous to the English reader.

In his book on *Diseases of the Heart*[10] Dr. HARRIS attempts to give to students and practitioners "a complete account of cardiology, old and new, in as concise a form as possible." This laudable object is difficult of attainment in a small book of about 200 pages, and we fear that to make it profitable for students much of the precision of detail, which apparently has been sacrificed to brevity, would require to be incorporated. For instance, in the section dealing with the analysis of jugular tracings it is twice stated that "once the *c* wave is recognized the other waves are easily made out," and again, "before *c*, *a* is expected, and after *c*, *v*." Analysis of these tracings is not always easy for the experienced, and for the student more guidance is required. Electro-cardiograms are freely used for purposes of illustration, but better examples might have been obtained for most of the conditions, while some are misleading. Figs. 25 and 26, illustrating paroxysmal tachycardia, are quite useless for any purpose. A lack of essential detail is also observed in the chapter on treatment. Under the heading of "doses," digitalis is recommended in certain doses, but the preparation of the drug is not indicated, while nine other substances are mentioned without stating the doses of any. The general aim of this book is commendable, but one gets the impression that it has been sent too hurriedly to the press. If a subsequent edition is called for it could be made much more useful by careful revision.

A volume of more than 300 pages, comprising the full report of the Fifth International Neo-Malthusian and Birth Control Conference held in London last July has just been issued.[11] The Conference was called and organized by a body now known as the New Generation League, and a report of the proceedings appeared in our issue of July 22nd, 1922 (p. 132). Besides the medical section there was a section on contraceptives, which held a private afternoon session open to members of the medical profession only; it was attended by 164 medical practitioners. Notwithstanding the privacy of this session, a verbatim report appears in the volume now published. The speakers were the President of the Section, Dr. Norman Haire, who opened the proceedings with a paper, Sir Arbuthnot Lane, Dr. L. Myer, Dr. M. I. Finucane, Dr. W. H. B. Stoddart, Dr. Killick Millard, Dr. Abraham Wallace, Dr. Frances Huxley, Lord Dawson, Dr. F. Goldstein (of Berlin), and Dr. Nyström from Sweden. At the conclusion of the session a resolution was passed expressing the view that "birth control by hygienic contraceptive devices is absolutely distinct from abortion in its physiological, legal, and moral aspects"; and that "there is no evidence that the best contraceptive methods are injurious to health or conducive to sterility." This was passed with three dissentients. The other sections appear to be reported with equal fullness.

The new number of *Brain*[12] is a double number, forming parts 3 and 4 of volume xlv. It contains half a dozen papers dealing with neurological subjects for the most part of a very technical kind; thus Drs. James Taylor, J. G. Greenfield, and J. P. Martin record two cases of syringomyelia and syringobulbia, observed clinically over many years, and examined pathologically; a study by Dr. Joshua Rosett of Columbia University, New York, of the cerebral fibre systems; and a paper by Dr. John S. B. Stopford, professor of anatomy in the University of Manchester, on a new conception of the elements of sensation. The number also contains reports of the clinical meetings of the Section of Neurology of the Royal Society of Medicine on November 9th, 1922, and January 11th, 1923.

[10] *Diseases of the Heart.* By I. Harris, M.D., L.R.C.P.Edin. London: Baillière, Tindall, and Cox. 1922. (Demy 8vo, pp. xii + 196; 50 figures. 12s. 6d.)

[11] *Report of the Fifth International Neo-Malthusian and Birth Control Conference*, Kingsway Hall, London, July 11th to 14th, 1922. Edited by Raymond Pierrepoint. London: William Heinemann (Medical Books), Ltd. 1922. (Demy 8vo, pp. xii + 308. 12s. 6d. net.)

[12] *Brain: A Journal of Neurology.* London: Macmillan and Co.; New York: The Macmillan Company. (Double number, 11s.; yearly subscription, 24s. net.)

CRIMINAL RESPONSIBILITY.

Two documents for submission to the Committee appointed by the Lord Chancellor, under the chairmanship of Lord Justice Atkin, have been issued during the last few days. The one is a memorandum of evidence on legal responsibility for crime, prepared under the authority of the Council of the British Medical Association for submission to the Committee; the other is a report, also for submission to the Committee, made by the Medico-Psychological Association.

Lord Justice Atkin's Committee is instructed to report upon what changes, if any, are desirable in existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised, and as to the nature of the changes which should be made.

The subject has engaged the attention of the British Medical Association for a good many years, and in 1913 a special sub-committee of the Medico-Political Committee was appointed to consider the present state of the law with regard to legal responsibility for crime. In due course it presented a report, which was approved by the Annual Representative Meeting in 1915, and the memorandum now issued has been based on that report. It was finally approved by the Council at its meeting on February 14th last. The Association has also arranged to give evidence to Lord Justice Atkin's Committee, and has nominated witnesses as mentioned in the concluding paragraph of the memorandum.

The following is the Memorandum of Evidence prepared by the Council of the British Medical Association for submission to Lord Justice Atkin's Committee.

MEMORANDUM OF EVIDENCE ON LEGAL RESPONSIBILITY FOR CRIME,

Submitted by the British Medical Association.

(A) HISTORICAL.

The Council of the British Medical Association on learning that the Lord Chancellor had appointed a Committee to consider and report upon what changes, if any, are desirable in the existing law, practice, and procedure relating to criminal trials in which the plea of insanity as a defence is raised, and whether any, and if so what, changes should be made to the existing law and practice in respect of cases falling within the provisions of Section 2, Sub-Section 4, of the Criminal Lunatics Act 1884, instructed the Medical Secretary of the Association to approach the Secretary of that Committee stating that the Association would be glad of an opportunity of giving evidence before that Committee. A favourable reply having been received, a Special Sub-Committee of the Association was set up, consisting of Sir Jenner Verrall, LL.D. (Chairman), Dr. J. W. Bone, Dr. H. B. Brackenbury, Dr. H. C. Bristowe, Mr. Roland Burrows, LL.D., Mr. E. J. Domville, O.B.E., Dr. R. Langdon-Down, Dr. James Scott, Lt.-Col. T. Knowles Stansfield, C.B.E., Dr. W. B. Crawford Treasure, and Mr. E. B. Turner.

As a result of the Central Association for Mental Welfare having approached the Association with a view to co-operation, 3 members of that Association, viz., Dr. E. Prideaux, Dr. F. C. Shrubsall, and Dr. A. F. Tredgold, were added to the Sub-Committee.

It is understood that evidence dealing with the position of prisoners committed for trial but not yet tried, will be permissible, and such evidence is submitted in para. VIII. hereof.

(B) MEMORANDUM OF EVIDENCE.

The Memorandum of Evidence which the Sub-Committee, on behalf of the Council of the Association, desires to lay before the Committee appointed by the Lord Chancellor is as follows:—

Sub-Section 4 of Section 2 of Criminal Lunatics Act, 1884.

I. The Council, realising its very great importaane, has given careful consideration to this matter, and has come to the conclusion that it cannot suggest any improvement in the method laid down in Sub-Section 4 of Section 2 of the Criminal Lunatics Act 1884 which reads as follows:—

> (4) In the case of a prisoner under sentence of death, if it appears to a Secretary of State, either by means of a certificate signed by two members of the visiting committee of the prison in which such prisoner is confined, or by any other means, that there is reason to believe such prisoner to be insane, the Secretary of State shall appoint two or more legally qualified medical practitioners, and the said medical practitioners shall forthwith examine such prisoner and inquire as to his insanity, and after such examination and inquiry such practitioners shall make a report in writing to the Secretary of State as to the sanity of the prisoner, and they, or the majority of them, may certify in writing that he is insane.

Legal Responsibility for Crime.

II. The Council of the Association is of opinion that the following might be accepted by the Medical Profession as a fair definition of responsibility for crime :—

An act may be a crime although the mind of the person who does it is affected by disease or defective power if such disease or defect does not in fact prevent him :—

(a) from knowing and appreciating the nature and quality of his act or the circumstances in which it is done ; or

(b) from knowing and appreciating that this act is wrong ; or

(c) from controlling his own conduct unless the absence of the power of control is the direct and immediate consequence of his own default ;

but no act is a crime if the person who does it is at the time it is done prevented either by defective mental power or by any disease affecting the mind :—

(a) From either knowing or appreciating the nature and quality of his act or the circumstances in which it is done ; or

(b) From either knowing or appreciating that the act is wrong ; or

(c) From controlling his own conduct, unless the absence of the power of control is the direct and immediate consequence of his own default.

N.B.—"Wrong" may mean (a) morally wrong ; (b) illegal.

Evidence as to Mental Condition of Accused Persons.

III. The Council of the Association is of opinion that the following Standing Order issued by the Prison Commissioners, which is understood to apply to prisoners who have been committed for trial but not yet tried, should be embodied in the official Prison Rules :—

302. (1) In the case of an untried prisoner, especially if charged with an offence of a grave nature, the Secretary of State desires that the prisoner's insanity shall, if possible, be publicly decided by the verdict of a jury, and that the prisoner shall, for this purpose, be left to stand his trial, unless there be strong reasons to the contrary.

(2) When immediate removal to an asylum is unnecessary, the Governor will merely forward the report of the Medical Officer to the Prison Commissioners, saying that it is not proposed to obtain the usual certificate of insanity, and will state the probable date of trial.

(3) When removal to an asylum appears to the Medical Officer to be, for special reasons, necessary, the usual certificate will be obtained and forwarded, as directed in Order 301. In filling up the certificate the probable date of the trial will be added to the particulars of commitment, and the report of the Medical Officer, setting out the nature of the insanity and the necessity for immediate removal, will be enclosed, together with a newspaper report of the Police Court proceedings. If this latter is not procurable, a short report of the particulars of the prisoner's crime will be furnished.

(4) When a prisoner awaiting trial has been certified to be insane, or is believed by the Medical Officer to have been insane on reception, or when there is any doubt as to his mental condition, the Medical Officer will furnish a report in writing to that effect to the Governor, who will forward it to the Clerk of Assize or Clerk of the Peace, as the case may be. In all cases when there is any reason to suppose that questions are likely to arise in Court as to the mental state of the prisoner, the Medical Officer will attend to give evidence if required, whether he gets a subpœna or not.

IV. The Council of the Association suggests that, wherever a report from the prison Medical Officer as to the mental state of the prisoner is communicated to the Clerk of the Court, it should be the duty of the Clerk to furnish a copy of the Report to Counsel or the solicitor acting for the prosecution and defence respectively.

Position of Persons found "Guilty but Insane."

V. The Council of the Association is of opinion that every person found "Guilty but Insane" should have the same right of appeal as is conferred by the Criminal Appeal Act on persons convicted on indictment ; provided that if in any appeal brought by such person the Court should be of opinion that the verdict should be set aside so far as the finding of insanity is concerned, the Court should have the power to order a new trial.

Persons found "Unfit to Plead."

VI. The Council of the Association is of opinion that persons found "Unfit to Plead" by the verdict of a jury and ordered to be detained, should be entitled, whilst so detained, at any time on proper conditions to apply to a Judge of the High Court to order the re-trial of the issue as to fitness to plead.

(It is understood that the rules by which such applications would be governed would need to be framed by the appropriate authority.)

Medical Officers of Prisons.

VII. The Council of the Association has given very careful consideration to the question of the status of Medical Officers of Prisons and wishes particularly to emphasise that it is desirable that such Medical Officers should have had experience in the diagnosis and treatment of disorders and defects of the mind.

EVIDENCE BY SPECIAL SUB-COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.

VIII. The foregoing is in substantial agreement with the policy adopted by the British Medical Association in 1915.

The Special Sub-Committee of the Association is of opinion :—

(1) That in the interest both of the community and of persons charged with or convicted of offences, it is desirable that, where there is reason to believe that the accused person suffers from mental defect or disease, machinery should be provided for the independent and impartial mental examination of the accused person.

(2) That the present method, by which medical evidence is presented by the Prosecution and the Defence in cases in which the accused is a person of means, is bewildering rather than helpful to Judge and Jury and liable to lead to miscarriage of justice ; that a similar miscarriage of justice may result in the case of persons without means owing to the absence of facilities for expert psychological examination.

(3) That some such scheme as follows might be adopted :—

(*a*) That a Panel should be formed consisting of medical practitioners with expert knowledge and experience of psychological medicine and of recognised standing, and that any accused or convicted person in whose case there is reason to consider that mental defect or disease is present should be referred to such panel for examination.

(*b*) That in the case of any such person charged with an offence which is punishable upon summary conviction such examination should be made by one or more members of the panel. That in the case of any such person charged with an offence which is punishable by death or a long period of penal servitude such examination should be made by not less than three members of the panel.

(*c*) That the report of such examination should be furnished to Prosecution and Defence before the trial and that at the trial evidence should be tendered in person by the expert or experts who examined the accused and should be considered by the Court in deciding the responsibility or otherwise of the accused.

(C) NAMES OF WITNESSES OF THE ASSOCIATION.

The following Witnesses have been appointed to give evidence on behalf of the Council of the Association before the Committee appointed by the Lord Chancellor :—

SIR JENNER VERRALL, LL.D., L.R.C.P., M.R.C.S., Consulting Surgeon, Sussex County Hospital—Chairman of the Insanity and Crime Sub-Committee, British Medical Association.

ROLAND BURROWS, LL.D.—Barrister-at Law.

R. LANGDON-DOWN, M.B., B.Ch., Physician to the National Association for the Welfare of Feeble Minded.

E. PRIDEAUX, L.R.C.P., M.R.C.S., Mental and Neurological Inspector, Ministry of Pensions ; late Assistant Medical Officer, Banstead Asylum.

JAMES SCOTT, M.B., C.M., Ed., late Governor and Medical Officer, H.M. Prison, Holloway ; and late Medical Officer, H.M. Prisons, Brixton, Holloway, Newgate, etc.

T. KNOWLES STANSFIELD, C.B.E., M.B., C.M. Ed., Honorary Lt. Col. R.A.M.C. ; Consultant in Nervous and Mental Diseases to the Eastern Command ; late Medical Superintendent, London County Mental Hospital, Bexley.

A. F. TREDGOLD, M.D., Consulting Physician, National Association for Welfare of the Feeble Minded ; Medical Expert to Royal Commission on Feeble Minded ; Physician and Neurologist to Royal Surrey County Hospital ; Neurological Specialist to the Ministry of Pensions ; Consulting Mental Specialist to the Willesden Education Authority.

REPORT OF THE MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE Medico-Psychological Association of Great Britain and Ireland at its meeting on February 22nd adopted the report of its committee on criminal responsibility. The committee included medical superintendents of asylums, several persons now or formerly commissioners in England and Scotland, or Lord Chancellor's visitors, several persons concerned with the feeble-minded and with prison administration, and two barristers. The report is in form a memorandum to Lord Justice Atkin's Committee.

At the outset the opinion is expressed that the law as at present interpreted is unsatisfactory, and does not always permit the best and fullest evidence of a prisoner's mental condition to be laid before a court and jury.

The Judges' Rules, 1843.

Reference is made to the rules in M'Naghten's case (1843), which, it is stated, have for many years been the subject of cogent criticism both by medical men and by juries. Their survival is attributed to three causes: (1) the failure to propound an acceptable alternative; (2) the fact that on numerous occasions individual judges have disregarded and declined to act on them; and (3) the knowledge, shared by judges and juries alike, that although a person may be found guilty and sentenced, his case will be carefully reconsidered by experts appointed by the Secretary of State in accordance with the Criminal Lunatics Act, 1884, and that action will be taken accordingly notwithstanding the findings of the court.

The rules in M'Naghten's case are contained in the answers made by the judges to certain questions put to them by the House of Lords. The most important of the rules in the present connexion is the reply made to questions 2 and 3, which asked:

"(2) What are the proper questions to be submitted to the jury when a person afflicted with insane delusions respecting one or more particular subjects or persons is charged with the commission of a crime (murder, for instance) and insanity is set up as a defence; and (3) in what terms ought the question to be left to the jury as to the prisoner's state of mind at the time the act was committed?"

The answer to these two questions, which the judges took together, contains the following passage:

"The jurors ought to be told, in all cases, that every man is presumed to be sane, and to possess a sufficient degree of reason to be responsible for his crimes, until the contrary be proved to their satisfaction; and that, to establish a defence on the ground of insanity, it must be clearly proved that at the time of the committing of the act the accused party was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing; or, if he did know it [*sic*], that he did not know he was doing what was wrong."

The Growth of Knowledge.

The committee observes that insanity is admitted to be incapable of precise definition, but accepts as a rough and ready criterion the definition of a lunatic in the Lunatics Act, 1890, as "an idiot or person of unsound mind." On this part of the subject the committee makes the following pronouncement:

"These rules are not wrong in holding that irresponsibility is only an inference that may or may not be drawn from insanity; where they err is in attempting to define precisely the conditions under which the inference is legitimate. They identify responsibility with knowing and reasoning, whereas any medical man with experience of the insane must know of many persons as to whose insanity (and irresponsibility) there can be no possible doubt, who have realized the nature and quality of their act, have known that it was contrary to the law, human and divine, and have shown remarkable cleverness in carrying out their object."

The committee assumes that the judges framed rules in accordance with what they were advised was the generally accepted medical view as to the nature of insanity. The crux of the situation seems to be that the conception of unsoundness of mind implied in the questions and answers is now obsolete. The committee says:

"Unsoundness of mind is no longer regarded as in essence a disorder of the intellectual or cognitive faculties. The modern view is that it is something much more profoundly related to the whole organism—a morbid change in the emotional and instinctive activities, with or without intellectual derangement. Long before a patient manifests delusions or other signs of obvious insanity he may suffer from purely subjective symptoms, which are now recognized to be no less valid and of no less importance in the clinical picture of what constitutes unsoundness of mind than the more palpable and manifest signs of the fully developed disorder, which may take the form of delusions, mania, melancholia, or dementia."

The Scots law is similar to that of England, and the position seems to have been well summed up in 1907 by the then Lord Justice General, Lord Dunedin:

"In one sense no one can say what insanity is. I do not think if we had all the doctors here who are learned on the subject that any two of them would agree on a definition. It is quite certain that what may be called the scientific view on insanity has greatly altered in recent years, and courts of law, which are bound to follow, so far as they can, the discoveries of science and results of experience, have altered their definition and rules along with the experts. . . . Acts of Parliament cannot deal with scientific opinions, and therefore it is left to juries to come to a commonsense determination on the matter, assisted by the evidence led, and any direction which the judge can give."

The change of opinion, the committee states, explains how at the present day a medical witness may find a real difficulty in satisfying the court when pressed to give a categorical Yes or No, and secondly the impracticability of attempting to frame any other formula. It considers it reasonable to propose that the facts as to insanity should be put before the court unhampered by any formula, and states:

"Elucidation of all the relevant facts, including such conditions of defective control as occasion epilepsy, impulses, obsessions, hysterical states, drug addiction and alcoholism in their bearing upon an alleged crime, would, in many cases, be necessary, and medical witnesses experienced in the care and treatment of the insane could give assistance to the court in that direction. A jury, upon the facts so presented, with such guidance as the judge might feel it necessary to give, should have no insuperable difficulty in reaching a correct conclusion.

"In our view the law should be framed so as to allow the medical witness alleging insanity to make it clear that the facts observed by himself, supplemented by other evidence before the court, form in his mind a coherent clinical picture of mental disorder; and he should be in a position to state that the prisoner's criminal act is symptomatic of, or at least consistent with, such a condition. His evidence should enable a jury to find that, even if there should be no apparent logical connexion between the prisoner's mental derangement and his criminal act, it is reasonable to conclude that both form part of his mental unsoundness, and it is important that that evidence should be placed before them as fully as possible. According to the present practice, experts on this question are subject to restrictions which are not imposed on experts on other matters. There does not appear to be any sufficient reason why a medical man should not be allowed to state his grounds for arriving at an opinion in his own way, subject always to the fullest cross-examination by the other side and by the court."

Recommendations.

The conclusions of the committee are as follows:

(i) The legal criteria of responsibility expressed in the rules in M'Naghten's case should be abrogated, and the responsibility of a prisoner should be left as a question of fact to be determined by the jury on the merits of the particular case.

(ii) In every trial in which the prisoner's mental condition is in issue the judge should direct the jury to answer the following questions:

(*a*) Did the prisoner commit the act alleged?
(*b*) If he did, was he at the time insane?
(*c*) If he was insane, has it nevertheless been proved to the satisfaction of the jury that his crime was unrelated to his mental disorder?

(iii) We would further suggest that the present practice of dealing with persons who are found insane upon arraignment is unsatisfactory and might be reconsidered. As the law stands a finding of insanity upon arraignment may result in a man—conceivably unconnected with and innocent of the offence with which he is charged—being sent to a criminal lunatic asylum. Experience shows that it is always best, if possible, to let the prisoner stand his trial and plead. This course does away with his after grievance that he was never convicted of the offence with which he was charged, and that, in fact, he never was tried for it. In the vast majority of cases there is no reason to doubt that the man did commit the act, but the fact that the crime was never brought home to him, and that, being found insane, he has been ordered to be detained during His Majesty's pleasure, does give him a grievance of which he makes the utmost use, and to which it is difficult to give a satisfactory answer.

When a person is found unfit to plead we would suggest that a plea of "Not Guilty" should be recorded by the court, and the trial on the facts allowed to proceed—in his absence if he cannot properly be present in court, arrangements being made for him to be represented by counsel and solicitor.

We presume that to enable this course to be adopted some amendment of the Criminal Lunatics Act, 1800 (39 and 40 Geo. III, c. 94), sec. 2, would be necessary.

(iv) We would also suggest that the law be amended to enable the verdict now expressed as *Guilty but insane* to rank as a conviction for the purposes of appeal to the Court of Criminal Appeal.

(v) We are of opinion that it would not be practicable to have medical assessors to the court in cases where insanity is raised as a defence to a criminal charge. We think, however, it might be possible to have a panel of accredited experts appointed, any of whom could be called on by the court to give evidence, subject to cross-examination by either side, and without any derogation from the right of either side to call its own expert witnesses.

Finally, the committee expresses itself against any amendment of the Criminal Lunatics Act, 1884, the provisions of which it looks upon as both humane and necessary. The report is signed by Dr. Nathan Raw (chairman of the committee), Professor G. M. Robertson (president), and Dr. R. Worth (honorary general secretary) of the Medico-Psychological Association.

THE IRRITATIVE TYPE OF LETHARGIC ENCEPHALITIS.

WE are indebted to Dr. A. K. Chalmers, M.O.H. Glasgow, for a copy of a memorandum by himself and Dr. A. S. M. Macgregor, senior assistant in the Public Health Department, Glasgow, on an outbreak of lethargic encephalitis which began there in February and included a number of cases of a severe type showing uncommon irritative features.

Incidence of the Disease in Glasgow.

It is, they state, difficult to give an idea of the incidence of the disease in Glasgow during the past few years because the cases notified in 1921 and 1922 mainly showed the sequelae of missed infections in 1920. The following table gives the admissions to certain fever hospitals during the five years 1918–22; many other cases were treated in the general hospitals, especially during 1920, when the affection was last prevalent in Glasgow. It appears from the table that there was a small peak of incidence during the fourth quarter of 1919, and another during the second quarter of 1920.

Admissions of Cases of Encephalitis Lethargica to Belvidere and Ruchill Fever Hospitals, Glasgow, between 1918 and 1922.

	1918.	1919.	1920.	1921.	1922.
First quarter ...	—	6	6	2	1
Second quarter ...	4	3	22	5	4
Third quarter ...	3	1	3	1	—
Fourth quarter ...	—	11	3	4	—

Encephalitis lethargica was made notifiable in Glasgow in 1918; evidence of its incidence based on notification is very unreliable, because undoubtedly the number (63) notified in 1920 did not reveal the extent of the epidemic, as many cases sickening during the year were only recognized and reported one, two, and even three years later, on account of typical sequelae. It is thought probable that the notifications for 1923 will form a more accurate index of the prevalence of the disease, because of the experience gained in 1920. In the cases which began to be observed towards the end of February last the irritative stage has tended to be more pronounced and more prolonged and the febrile disturbance greater than in such sporadic cases as have been met with prior to and since 1920, the last period of undoubted prevalence in the city. In 1920 many of the cases sickening in the spring and early summer were of somewhat severe type with fever, sudden onset and spasmodic or "choreiform" muscular agitation during the illness, tending to be followed by paresis or paralysis of groups of muscles. There is now a recurrence of this type, apparently in greater number and, in some instances, in even more severe form.

The sudden appearance of cases of this variety was observed and reported simultaneously by Dr. Leonard Findlay, Dr. Ivy McKenzie, and others at the same time as one or two such patients were admitted to Belvidere and Ruchill Fever Hospitals. The account of the salient clinical features is based on reports furnished by Drs. Findlay and McKenzie, Drs. Archibald and Elliott of Ruchill and Belvidere Hospitals, and on investigations by the public health staff.

Since the beginning of February 38 cases of lethargic encephalitis have been notified or reported in Glasgow, one sickening in December, 1922, 5 in January, 1923, and the remainder in February. The ages of the patients varied from 1½ to 56 years, 22 being over 15 years of age; 8 have died after illness lasting from six to seventeen days. The cases have occurred sporadically, being distributed throughout the city and quite unassociated with one another; in no instance has more than one member of a family been affected.

Symptoms in Present Outbreak.

Clinical data are available in respect of 33 patients; in a number of them the symptoms approximated to the classical description of the affection, irritative symptoms being slight or absent, neuro-muscular disturbance confined to the ocular muscles, and drowsiness (or lethargy) a prominent feature. The majority, however, have presented a pronounced irritative stage, with excitement, delirium, and restlessness, especially at night, sometimes requiring forcible control, while spasmodic twitching or choreiform movements of the limbs or of the whole body have been a marked feature of most of the cases, and have been very violent in some. The onset has commonly been that of an acute infection, and the temperature has varied from 100° to 102° F., but was occasionally higher. Hyperpyrexia has occurred in fatal cases. Restlessness and twitching movements, when prominent, have appeared early, but in some cases there has been a preliminary period of a few days to a few weeks marked by headache, sleeplessness, neuralgic pains in the limbs, trunk, or face, giddiness, and occasional vomiting. Ophthalmoplegic symptoms, of which the chief is diplopia, are typical of the disease, but may be transient and therefore absent at the time of examination.

While this brief description may be regarded as fitting loosely the prevailing sharper type of case, others have occurred in which the acute toxic symptoms have been of excessive severity, as in the following case under Dr. Ivy McKenzie's care in the Eastern District Hospital, Glasgow.

R. R., female, aged 19 years; onset of illness on February 13th, with sleeplessness and restlessness; double vision developed on February 15th, when she became delirious. Next night she was delirious and highly fevered. On admission to hospital the temperature was 103° F., and the patient appeared very ill; she was very restless, constantly coming out of bed and inclined to be resistive. She took her nourishment well but did not sleep. Her attention could always be sustained, but she did not speak. She did not sleep even with sedatives till the night before she died, except for one hour. There was slight squint, no abnormality of pupils, reflexes normal, no paralysis. The patient had twitching of legs, arm, and body. There was no lethargy and no great psychomotor excitement. She died on February 23rd.

It will be noted that the patient died in the acute restless stage. The following example of a prolonged irritative restless period is also from notes furnished by Dr. Ivy McKenzie.

Mrs. B., aged 33 years; onset of illness on night of February 16th, with symptoms of chill with pain in right shoulder, restlessness, sleeplessness, and general twitching movements. Very ill on admission, with temperature 101° to 103° F. She had jerky tremulous movements not at all resembling chorea, more like clonus in the arms. There was also twitching of the face. She complained of headache, but had no squint or diplopia. Was very sleepless and restless, constantly trying to get out of bed; very delirious, but could always be recalled from delirium with ease. The movements have gradually become less; she has slept under paraldehyde and is no longer delirious. No evidence of lethargy.

Acute cases of this nature where lethargic symptoms are absent have been exceptional, but the cases are given to show the severity and duration to which the irritative stage may reach.

The signs and symptoms referable to the involvement of the central nervous system are extremely varied, and it has been found difficult to give a concise description of its onset and progress. The former may be acute or gradual and the latter brief or prolonged, with resulting exhaustion and mental impairment. The following case, reported by Dr. Archibald, Belvidere Fever Hospital, and Dr. R. S. Fullarton, is given as being probably as typical as any in the present outbreak.

M. M., female, aged 8 years. On February 4th she complained of noises in her ears; on the 7th the eyes were congested and looked as if "she were taking measles." On the 8th the patient's mother noticed that her legs were twitching, and could feel the "jerks" of the thigh muscles. At night she had hallucinations and was very restless and "delirious," also complaining of pains

in the calves of the legs. Admitted to Belvidere Hospital on the same day; on observation there the patient's illness fell into stages, the first marked by a period of delirium, restlessness (child getting out of bed), with lethargy, mental confusion, and choreiform movements, first of the left side of the body, then of both sides; during this time the temperature was rising to 101–102° F. This period lasted for about six days from its onset. The next stage was one of constant drowsiness, lessening of choreiform movements, absence of excitement, and dazed facies, lasting about a week, during which the temperature, at first sustained, began to remit. This was followed by a period during which the child showed morning brightness and evening drowsiness, and absence of choreiform movements; the temperature was intermittent, with evening rises to 100–101° F. This lasted for about ten days, after which the temperature became normal and the child apparently well.

General Summary.

The cases do not readily fall into definite clinical types; particular signs or symptoms may be absent or variously combined in different patients with great variation in their duration and intensity. Among these the following are selected for mention, though they are by no means always present in individual cases of the severer types of illness:

1. *Symptoms on Onset.*—The initial complaint may be of rheumatism or neuralgic pains in a limb, the shoulder, neck, face, or abdomen, trifling or severe. Headache is common, and vomiting occasional. Sleeplessness is a very prominent and early symptom. One or two have commenced with "influenza" or sore throat.

2. *Fever.*—In the acuter cases there may be fever from the beginning, continuous at first and later intermittent. In a few cases, usually fatal, there may be hyperpyrexia. Many patients, however, although showing much motor disturbance and delirium, have little fever.

3. *Delirium and restlessness* may be extreme, requiring forcible control. A feature of the delirium is that the patient can be roused and can answer questions sensibly enough, though there may be some mental confusion. Restlessness may be a continuous feature or may alternate with drowsiness. When present it occurs, or is worse, during the night.

4. *Involuntary muscular movements* are variously described as twitching, spasmodic, choreiform, involving the feet, the limbs, or the whole body. In a severe case the body may be jerked from flexion to extension and vice versa, and the patient may have to be held in bed. Twitching has been definitely present in 18 cases in the present series. It may, however, be so slight as to be overlooked unless watched for. In milder cases it is not unlike the spasmodic contractions of tic. Spasticity is associated with its presence.

5. *Insomnia* is an almost constant feature, sleeplessness being an early and noticeable symptom in most cases. It may precede onset of twitching by a few days.

6. *Lethargy* may be present early or may succeed the irritative stage. In a few of the patients it was not a prominent feature, but the great majority had this symptom in greater or less degree. The face may assume a dull mask-like expression.

7. *Ocular Phenomena.*—Diplopia is the most frequent of these and may be persistent or transient; ptosis may be present on one or both sides, and in one or two instances nystagmus has been observed. The appearance and reaction of the pupils vary considerably.

OXFORD CONTRIBUTORY HOSPITAL SCHEME.

STATEMENT BY DR. WILLIAM COLLIER.

WE have received from Dr. William Collier an account of how the Oxford hospital scheme* has fared during the past two years. He writes:

The scheme was started in September, 1920. A contributor is asked to subscribe 2d. a week, children of wage-earning age 1d. until they are earning an adult's wage. In the case of married couples, when the husband and wife each subscribe 2d. a week, their children are entitled to treatment up to wage-earning age. Every care is taken to prevent those who are in a position to pay for adequate medical advice from joining. No contract is made with the contributors.

In 1921 the scheme brought the hospital a little over £17,000, but we had yet to enrol a number of villages and firms. In 1922 the scheme brought the hospital a little over £23,000. When one learns that in 1913 the total income of the hospital from all sources amounted to £9,559 one realizes how much those who use our hospitals can do towards keeping them on a voluntary basis.

We were told at the outset it would be impossible to get agricultural labourers voluntarily to subscribe as much as 2d. a week; they have done so, and in spite of the enormous reduction in their wages they still continue to do so.

We have organized Hospital Aid Committees in 295 villages; and in the towns, including Oxford itself, we have Aid Committees in every parish. In this way over two thousand people are working for, and are interested in, the maintenance of our hospital on a voluntary basis, who a few years ago scarcely gave the hospital a thought. A very large number of meetings have been organized in the villages. At these meetings the speakers explain why both surgical and medical work has become so much more expensive, why it is important to keep our hospitals on a voluntary basis, why those who are present should join the scheme, and so on.

Perhaps one of the most striking examples of the way in which those can help who have a mind to is the fact that last year the employees of two shops in Oxford, from which the hospital obtained nothing in 1919, contributed between them £230 5s.

The total cost of working the scheme comes to a little less than 4½ per cent. of the amount collected.

Dr. Collier includes the following financial statement:

RADCLIFFE INFIRMARY AND COUNTY HOSPITAL, OXFORD.

WEEKLY CONTRIBUTION SCHEME.

Financial Statement, 1921, 1922.

1921.	£ s. d.	1922.	£ s. d.
Received during the year and to Jan. 10, 1922	16,281 11 1	Received during the year and to Jan. 10, 1923	21,538 5 7
Received during 1922 in respect of 1921 ...	1,150 4 3	Amount received for 4th quarter after Jan. 10, 1923	1,521 4 1
	£17,431 15 4		£23,059 9 8

Increase on year, £5,627 14s. 4d.

Expenditure.

1921.	£ s. d.	1922.	£ s. d.
Appeals	926 12 6	Appeals	463 19 1
Salaries and wages ...	538 1 9	Salaries and wages ...	581 10 0
		Superannuation Fund ...	21 19 7
	£1,464 14 3		£1,068 8 8

Decrease of expenditure, £396 6s. 2d. Proportion of expenditure to total receipts, 4½ per cent.

Dr. Collier sends a list of some typical examples of increased incomes from various places, from which we make the following selection (the first two places are market towns, the rest villages):

Typical Examples of Increased Income from Market Towns and Villages.

Place.	Income from all Sources. 1913.	1920.	1921.
	£ s. d.	£ s. d.	£ s. d.
Abingdon	69 11 7	191 17 2	1,001 4 9
Witney	102 2 0	236 14 9	1,498 12 7
Kidlington	15 6 0	59 14 1	294 16 8
Enstone	25 10 0	20 10 0	214 13 5
Bampton	21 3 6	38 12 1	223 17 9
Leafield	12 17 5	47 1 9	180 15 8
Long and Little Wittenham	14 14 6	42 11 2	156 13 11
Garsington	10 12 8	16 0 5	136 15 2
Kirtlington	8 10 5	22 8 7	183 9 1

Dr. Collier also sends some examples of the increased income from employees. Thus the contributions received from men employed by the Great Western Railway Company at Oxford rose from £35 in 1914 to £116 in 1920 and £478 in 1921; from those engaged by the University Press from £30 in 1914 to £129 in 1921; and from the employees of a motor manufacturing company from £64 in 1920 to £106 in 1921.

THE staff of the Buffalo General Hospital has started the publication of a *Bulletin*, to contain records of cases occurring in the hospital. The first number, which is before us, bears the date January, 1923; it is very well got up, the illustrations are excellently reproduced, and all the cases are well worthy of record.

* See BRITISH MEDICAL JOURNAL, March 11th, 1922, p. 397.

British Medical Journal.

SATURDAY, MARCH 24TH, 1923.

THE MECHANISM OF ASTHMA.

WITH the recent advances of knowledge in biochemistry, serology, and anaphylaxis, the vegetative nervous system, and the endocrine balance, much discussion has arisen as to the causation and mechanism of asthma and allied conditions. It is important to bear in mind the existence of these allied conditions and to regard asthma as a symptom or mode of reaction to various irritants which in this instance give rise to manifestations in the bronchial tree. The comparison of pyloric spasm, enterospasm, and mucous colitis (or mucous colic) with asthma illustrates the widespread distribution of this reaction.

Forty years ago asthma was grouped with the paroxysmal neuroses, such as migraine and epilepsy, and the conception of asthma as a reflex neurosis long held the field, though for a time at any rate it has been rather driven into the background by the explanation that it is an allergic phenomenon, resembling but not identical with anaphylaxis. That many cases of asthma are of this nature has been convincingly proved by the ingenious observations of Drs. I. C. Walker and Rachemann of Boston, John Freeman, and others; but all cases cannot be brought under this heading. Accordingly, Dr. A. F. Hurst has constructed an exceedingly inclusive definition of asthma. He would have us regard it as the reaction of the over-excitable bronchomotor portion of the vagus nucleus to blood-borne irritants and to peripheral and psychical stimuli, thus including the classical example of the precipitation of an asthmatic paroxysm when a person hypersensitive to roses was made to smell an artificial rose.

In his able address on the problems of asthma[1] Dr. Langdon Brown agreed with Eppinger and Hess that the asthmatic patient is a vagotonic, or the subject of excessive irritability of the vagus and parasympathetic. The normal balance between the sympathetic and the parasympathetic in health may be disturbed, and it has been stated that practically all diseases tend to produce such a disturbance, resulting in either vagotonia or sympatheticotonia, and that certain persons have as part of their make-up a preponderance of activity of the parasympathetic (vagotonia) or of the sympathetic. That excessive activity of the parasympathetic is concerned in the production of asthma has been strongly suggested by the remarkable curative action of hypodermic injections of adrenaline, whereby the effect of sympathetic stimulation is produced; but it must be remembered that an asthmatic paroxysm may be relieved by other means, such as morphine injections and amyl nitrite inhalations. Moreover, the argument that a disease is due to absence of the remedy that brings symptomatic relief must not be pressed, though in the case of endocrine extracts it is, of course, specially attractive. As the activity of the sympathetic is bound up with the output of adrenaline, insufficiency of the adrenals, by diminishing the tone of the antagonizing sympathetic, might lead to a relative vagotonia. If this sequence held good the subjects of Addison's disease and of other conditions, such as acute fevers and infections in which the adrenaline content is deficient (T. R. Elliott), should be specially prone to asthma and other manifestations of vagotonia; as this cannot be said to be the case, relative vagotonia does not appear to be important in the causation of asthma, and the tempting conclusion that asthma is primarily due to adrenal inadequacy cannot be regarded as established.

An absolute vagotonia, whether inborn or acquired, may, however, explain why certain persons only are hypersensitive to foreign proteins or other stimuli known to excite asthmatic attacks. In favour of this underlying irritability of the parasympathetic (vagotonia) appeal might perhaps be made to the well known hereditary character of asthma and to the frequency with which the hypersensitiveness is shown (at first at any rate) to a group of foreign proteins and not to a single one or to the same one as in the parent. This is a difficult subject, and it may be safer at present to rest content with Dr. A. F. Hurst's view that in some cases an irritable vagal centre, in others a toxic idiopathy, and in some again both these factors, must be regarded as responsible. It is certainly attractive to consider that in asthmatic and allied conditions there are two etiological factors: the disposing condition of the soil, such as vagotonia or a hypersensitive state to foreign proteins, on the one hand, and the exciting cause, such as the foreign protein, or a mechanical or psychical stimulus, on the other hand, which would not produce the asthmatic reaction in the absence of the disposing factor. But here again the conditions may be complicated, for the same factor may appear to set up both vagotonia and the paroxysm. Thus, in recording cases of asthma due to appendicitis, Gutmann[2] argues that the irritation of the terminal fibres of the vagus in the fibrotic appendix, on which Masson has described neuromas, sets up vagotonia, and that for the most part the familiar symptoms of appendix dyspepsia are those of vagotonia. In one of his patients, an asthmatic woman aged 38, pressure over the appendix immediately brought on a paroxysm of asthma. This striking event may of course be explained in other ways—for example, by psychical stimulus—but it raises the question whether in bronchitic asthma the local irritation produces vagotonia and the bacterial toxins act as the exciting agents of the paroxysm.

The conception of vagotonia, though it has met with much critical opposition, appears to be gaining ground, and the question arises whether in asthma and allied conditions there is this underlying factor which disposes the victims of the diseases to become hypersensitive to foreign proteins and other stimuli, or whether, in some instances at least, hypersensitiveness is the only factor.

[1] BRITISH MEDICAL JOURNAL, 1922, i, 758.

SUGAR *VERSUS* ALCOHOL.

IT is said that the Chancellor of the Exchequer may have to make a choice between a reduction of the tax on sugar and a remission of the duty on beer. If a decision between these two alternatives should become the subject of a debate in Parliament, medical opinion may be sought or quoted in favour of one or other of these two proposals. For this reason a few words from the physiological standpoint would not be out of place.

We must begin by frankly admitting that the question cannot be settled satisfactorily or adequately on physiological or dietetic grounds alone. There are considerations of expediency, political as well as psychological, which cannot be excluded from the argument. And the habits and tastes of a people are very insistent facts. From the physiological point of view neither alcohol nor sugar can be regarded as essential elements of the human dietary, while from the economic point of view they must be looked upon as luxuries.

In the case of alcohol, whether in the form of wine, spirits, or beer, there is an unrecoverable loss of about 60 per cent. in the energy value of the grain or sugar

[2] Gutmann: *Presse méd.*, Paris, 1923, xxxi, 72.

from which they are severally derived. Further than this, alcohol has a very restricted field of usefulness as a source of energy in the body economy. The average man is reputed to be capable of making physiological use of no more than a very few ounces of absolute alcohol in the twenty-four hours. Although this is probably not true of the habitual toper who has learnt the art or the vice of metabolizing alcohol in his system, it may reasonably be regarded as representing the capacity of the average temperate person. On the other hand, the aesthetic and anaesthetic qualities of alcoholic beverages, greatly prized by many, cannot be expressed in terms of calories.

If it is difficult to defend on dietetic and economic grounds alone the virtues of beer and other stimulants, it is equally illogical to claim exemption or remission of tax on sugar on the ground that it is an essential or valuable food for children. Infants in arms alone are dependent on sugar as the source of their carbohydrate supply, and they are only dependent on it because their capacity for malting starch or converting it into sugar is at this period of life incompletely developed. Since all forms of carbohydrate must ultimately be converted into sugar before they can be physiologically made use of in the animal system, it is clear that on the grounds of their energy values, starches and other insoluble carbohydrates if they can be digested are quite as valuable as the more expensive sugars, which, as a rule, cost nearly four times as much. It is only quite recently that sugar has become a staple article of diet in temperate climes, and humanity seemed to get on very well without it. Even a hundred years ago its use was extremely restricted, while in mediaeval and ancient days honey was the only form in which it was used.

As compared with starch, sugar has the grave disadvantage of being so readily digested and absorbed that, when taken in excess, it may flood the blood at a rate greater than physiological conditions require, and as such become an embarrassment to the body as a whole. Farinaceous and other forms of insoluble carbohydrate, on the other hand, by reason of their slower rate of hydrolysis and inversion into soluble and mono-saccharide sugars in the alimentary canal, afford a more sustained reinforcement of the blood with the required carbohydrate supplies. Sugar, in fact, is a pleasant condiment but an expensive food, and it may, by reason of its agreeable gustatory qualities, commend itself so greatly to the taste of children as to lead to the serious pathological results due to excessive consumption. On the other hand, sugar has economic, commercial, and gustatory merits in the preservation and flavouring of cooked fruits, as, for instance, in the making of jam. From the dietetic point of view jams and preserves have much to recommend them as foods for children as well as for adults, and this side of the argument must not be overlooked.

If the sorely tried taxpayer is to have some relief from his burdens by reason of some relaxation of sumptuary restrictions, both beer and sugar may have definite claims on the clemency of the Chancellor, but purely from the physiological and dietetic point of view the claims for such exemption can only be maintained with difficulty, and those of one hardly more so than those of the other.

PATHOLOGICAL MUSEUM AT THE ANNUAL MEETING.

THE Committee appointed to organize the Pathological Museum in connexion with the Annual Meeting of the British Medical Association at Portsmouth next July proposes to arrange the material under the following heads: (i) Exhibits bearing on discussions and papers to the various Sections; (ii) specimens and illustrations relating to any recent research work; (iii) instruments relating to clinical diagnosis and pathological investigation; (iv) individual specimens of special interest, or a series illustrating some special subject. It is also proposed to make an effort to gather together a series of exhibits relating to diseases and injuries of blood vessels; illustrations referring to heredity, and to mental and physical deterioration; series of *x*-ray and other photographs and sketches. The Museum will occupy a central position in the same building as that in which the sectional work is carried on, and will be easy of access. The Committee desires to enlist the co-operation of members intending to take part in the work of the Sections, and will be glad to hear from those who are able to make exhibits. Every care will be taken of specimens, and the contents of the Museum will be insured. It is hoped to make arrangements whereby exhibitors may have an opportunity of demonstrating their specimens. The chairman of the Committee is Dr. J. A. D. Radcliffe, and the honorary secretaries are Drs. M. Aston Key and A. V. Maybury, jun. Communications may be addressed to Dr. Aston Key, 14, Clarendon Road, Southsea, Portsmouth.

RECENT ADVANCES IN THE TREATMENT OF LEPROSY.

SIR LEONARD ROGERS read a paper before the Dominions and Colonies and Indian Sections of the Royal Society of Arts on March 16th on recent advances towards the solution of the leprosy problem. After an interesting survey of the history of this disease, he said that the work of the last few years in improving the treatment of leprosy opened up a vast field for research. As early as 1854 the attention of English physicians was drawn to chaulmoogra oil, an old Indian remedy for leprosy and tuberculosis, which Sir David Prain showed to be derived from the seeds of the tree *Taraxtogenos kurzii*. Philippine observers showed that the seeds of various species of Hydnocarpus contained the same active principles. The crude oil given by the mouth had a good effect in leprosy, but it could not be taken for long on account of its nauseating properties. A case was reported from Egypt in 1899, of apparent recovery after a five years' course of injections of the oil, and in 1914 Dr. Heiser reported apparent cures of 11 per cent. of a small series of cases in the Philippines treated by this method, which, however, was painful. In 1915 Sir Leonard Rogers showed Dr. Heiser, in Calcutta, a patient who had nearly recovered under large doses of gynocardic acid, the lower melting point fatty acids of chaulmoogra oil. It was subsequently learned that a soluble sodium salt of gynocardic acid, suitable for hypodermic injection, had been made, and that a case in South America had been successfully treated by it. With the help of Dr. Bose sodium gynocardate was made; administered subcutaneously this proved to be of value in leprosy, although painful. Its suitability for intravenous injection was next ascertained by means of experiments on animals, and Sir Leonard Rogers soon obtained important results in the treatment of leprosy by that method, and after he left India the research was continued by Dr. Muir. During the next three years Sir Leonard Rogers ascertained that soluble preparations from other oils, including those of cod-liver oil and soya bean, were also effective in leprosy, and two others had recently been added by Dr. Muir. The important principle was thus established that the beneficial effects were not limited to chaulmoogra and hydnocarpus oils with their peculiar types of unsaturated fatty acids, as had been previously thought, and a wide field of research was thus opened out, which had been extended to the treatment of tuberculosis. Professor Dean and his colleagues in Honolulu confirmed the work and introduced another soluble product, ethyl ester chaulmoograte, which had previously been put on the market as a patent remedy by German chemists, and which could be more simply and rapidly administered intramuscularly than the sodium salts intravenously, although the latter were also sometimes required in resistant cases. By these methods the leprosy bacilli were gradually destroyed within the tissues, and might in time completely disappear so far as microscopical examination showed, together with all outward

signs of the disease. In a few cases steady progress and complete clearing up had been observed after a reaction produced by a few intravenous injections although all treatment was stopped after the reaction appeared; this indicated the production in the system of effective resisting powers. Sir Leonard Rogers expressed his anxiety that exaggerated hopes should not be raised; it was not wise to speak of "curing" leprosy, as great caution was still necessary. Nevertheless, in the largest leper asylum in India, at Purulia, within eighteen months of Dr. Muir's introducing the treatment on a large scale the mortality had been reduced to one-fifth of the former rate, and a very similar result had been obtained in China. The improved treatment had an important influence in simplifying segregation measures, for the greatest obstacle to effective segregation was the difficulty of isolating early cases of leprosy, who continued to form foci for the spread of the disease as long as they had everything to lose and nothing to gain by declaring their disease. Early cases had already come forward in the more curable stages to ask for the new treatment. Sir Leonard Rogers had strongly advocated in India in 1920 the provision of large leper colonies, with ample ground for cultivation, in open areas away from towns, in place of the Government leper asylums, which were prison-like buildings on very limited town areas. The advantages of such colonies were especially great in view of the fact that the injections had to be continued for many months and in some cases for a year or two. On the most conservative estimate the number of lepers in the world must be well over 1,700,000.

THE SUPPLY OF ARTIFICIAL LEGS.

THE thorough and sympathetic manner in which the Ministry of Pensions has dealt with the needs of pensioners who lost a leg in the war must surely be a source of pride to the people of this country. We believe that not one of the late belligerents has taken such pains or lavished relatively so much money as has Great Britain in its efforts to make up for the mutilations of its sailors and soldiers. The note published last week (p. 491) gave a brief summary of the rules for the supply of artificial legs, and some indication of the care which has been taken in this matter. Although the wooden legs which were supplied in the earlier years of the war were the very best then obtainable and gave great satisfaction to thousands of men, it soon became evident that in an alloy of aluminium a material existed which was in some respects, and especially in its lightness, superior to wood. At first the high price charged for such limbs, and still more the very small output of which the maker of the only light metal limb then on the market was capable, prohibited their adoption on any large scale; but modifications introduced during the last two years and the increase in the number of firms able to supply approved patterns have enabled the Ministry to issue light metal limbs to all suitable cases, although their cost is still very much greater than that of the best wooden limbs. The issue of these limbs is generally restricted to amputations above the knee, because it has been found that there is not much difference in weight and no difference in principles of control between the best wooden and the metal limbs for amputation below the knee. It is only in special circumstances, therefore, that the Ministry sanctions the issue of the latter. It is somewhat surprising that so few pensioners have availed themselves of the option of having a peg leg as one of the two prostheses to which they are entitled. The simplicity, strength, and lightness of a good peg leg are such obvious advantages in many circumstances that it might have been expected that the peg would have been popular for certain work and for use in the house. But the desire to hide disability is very strong among ex-service men, and the peg is therefore seldom issued. Should these rules come under the notice of civilians of the poorer classes who have lost a leg they must, we fear, excite envy of the ex-service man, for the cost of aluminium limbs is beyond the purses of most hospital Samaritan funds and similar charities. The civilian may, however, console himself with the reflection that after all a proper wooden leg is a very good second best.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Two years ago, primarily with the object of economizing, the Ministry of Health, assisted by the Society of Medical Officers of Health, came to a decision as to the form which the annual report of a medical officer of health should take and also as to the information which should be required by the Ministry. Local authorities were subsequently informed by circular of the conclusions arrived at by the Ministry, and appended to the circular were certain skeleton tables which medical officers of health were required to utilize. Their use in the annual reports for 1921 was very general and was testimony to the care with which they had been compiled. In a few instances slight modifications were made. Dr. E. Lloyd Owen, medical officer of health for the southern division of the Carnarvonshire combined sanitary districts, has modified and amplified the tables of the Ministry and has brought out, through Messrs. Knight and Co., 227, Tooley Street, London, S.E.1, a set of twelve forms under the name of "The Lloyd Owen Skeleton, Tabular, or Questionnaire Scheme of Annual Health Reports." The first table follows very closely that of the Ministry of Health, but includes information as to zymotic mortality and as to tuberculous mortality, but without distinguishing pulmonary from other forms of tuberculosis. The Ministry asks that the number of cases of diseases notified during the year should be arranged under certain age groups, but this is not provided for in Dr. Owen's table. His tabular arrangement of cases of ophthalmia neonatorum is, however, an improvement on that of the Ministry. The information supplied by the Registrar-General with respect to the causes of death distinguishes between males and females, but in Dr. Owen's table no such distinction is made. The remaining forms in Dr. Owen's series serve a useful purpose in reminding medical officers of health of the information they are required to supply, and the table of "Regulated Establishments" is drawn up with great care and exactness. There are many medical officers of health who will find Dr. Owen's skeleton forms extremely useful.

DEATH OF WILLIAM PEARSON.

THERE has just died at his home at Waddon, Surrey, in the 83rd year of his age, William Pearson, who served the Royal College of Surgeons, England, as its prosector for almost fifty-eight years. He was a craftsman of the highest skill, and the excellence of the anatomical preparations with which he enriched the museum of the College not only gives his name a permanent place in the records of the museum, but gives him also a prominent place amongst those who have developed anatomical technique in this country. At Michaelmas term in the year 1856, being then a lad of 15, he was engaged to work as an attendant in the museum. Soon after his arrival Sir Richard Owen went from the College of Surgeons to the British Museum, and was succeeded by Quekett, who in 1861 was succeeded by the late Sir William Flower. In 1862 the late Professor J. Pettigrew came from Edinburgh University to assist Flower, and brought with him a very finished and successful method of unravelling and displaying the arrangement of fibres in muscular organs. In young William Pearson he found a most apt pupil who developed the method, and year after year under a succession of conservators and presidents enriched the museum with series upon series of preparations. His success depended as much upon his knowledge of anatomy and comparative anatomy as upon skill of hand. Even in 1914, when he was in his 73rd year, and when failing health led to his retirement on a liberal pension, his cunning showed no sign of decay. Great as was Pearson's craftsmanship, it was his manhood which attracted and held the esteem of the numerous generations of medical men who were brought intimately in contact with him in the

workrooms of the museum and in the examination hall. His native honesty of bearing and of purpose, his broad healthy humanity, won him the esteem of all the thirty-three presidents under whom he served, the members of the successive courts of examiners to whom he ministered, and the thousands of young candidates whom he guided through the ordeals of the examination room. He was the third of a line of Pearsons—grandfather, father, and son—who served in the museum since it was set up in Lincoln's Inn Fields 130 years ago. Thomas the grandfather, Edward the father, and William who has just died, had a united term of service of 153 years. The late Mr. Clinton T. Dent did William Pearson's wide circle of friends a real service when he commissioned Mr. W. Onslow Ford to paint a portrait of the great prosector. That portrait now hangs in the conservator's office.

THE MENTAL AFTER-CARE ASSOCIATION.

THE annual meeting of this useful society, which for more than forty years has rendered much needed assistance to poor persons on their convalescence after an attack of insanity, was held on March 16th at Merchant Taylors' Hall, under the presidency of Alderman Sir C. C. Wakefield, Bt., who was supported by the Lord Chancellor, Sir Frederick Willis (chairman of the Board of Control), Sir James Crichton-Browne, M.D., Sir Maurice Craig, M.D., Dr. Percy Smith, and Mr. D. Cawdron (chairman of the L.C.C. Asylums Committee). There was a large audience, but unfortunately the energetic secretary, Miss Vickers, was absent on account of illness. The report for 1922 was presented by Dr. Rayner (chairman of Council), and its adoption moved by the Lord Chancellor, who, after expressing his high appreciation of the work of the association in supplying those who had successfully passed through asylum treatment with sorely needed aid and advice in starting afresh in the world, referred to the measures now under the consideration of the Government to provide greater facilities for the early treatment, uncertificated, of cases of mental disorder considered curable. After-care, which came specially within the scope of this association, was also receiving the Government's attention, and his Lordship hoped that the visiting committees of mental hospitals would be given further and greater powers in that direction. The good work carried on for so many years by the association indeed afforded encouragement for such a course, though officially provided services did not always successfully compete with those of private individuals rendered out of a spirit of charity and kindliness. Sir Charles Wakefield stated that the number of cases applying for assistance had been 944 during 1922, against 874 in 1921 and 379 in 1920. Unfortunately contributions had not increased *pari passu*, and it was extremely desirable to relieve the society of the heavy burden which a deficit of £740 in last year's income had entailed. Patients were discharged "recovered" from our mental hospitals at the rate of some 7,000 annually; a considerable number of them would benefit by the kind offices of the association did its funds permit. The adoption of the report, having been seconded by Sir Frederick Willis, who bore testimony to the good work accomplished, was unanimously carried. The approval of the balance sheet was then moved by Sir Maurice Craig, M.D. (honorary treasurer of the association), seconded by Dr. Percy Smith, and agreed to. Sir James Crichton-Browne, M.D., in an eloquent speech, proposed the re-election of officers, and testified to the excellent arrangements made for the rehabilitation into ordinary industrial life of ex-mental patients—many without homes or friends—who, did they not receive such kindly care and assistance as the association's officers gave, would be apt to relapse in the struggle for existence; and special reference was made to the devotion to the ex-patients' interests of the small salaried staff, whose duties were rendered in the most sympathetic spirit. This was seconded by Mr. David Cawdron, and cordially carried. Mr. Ernest Sanger, L.C.C., and Dr. Henry Rayner proposed a vote of thanks to the President and the various speakers, which was carried by acclamation, and briefly acknowledged by the Lord Chancellor. The offices of the association are at Church House, Dean's Yard, Westminster, S.W.; the secretary is Miss E. D. Vickers, who will gladly supply any desired information as to its work.

THE "PROHIBITION" OF EVOLUTION.

MR. RUDYARD KIPLING'S story of the village that voted the world was flat, though at first sight pure farce, is, when philosophically considered, a contribution of historical value, illustrating the fact, not peculiar to this age, that there can always be found a certain number of persons to accept any proposition, however absurd, and to defend it the more enthusiastically the more absurd it is. This curious tendency of the human mind troubled the democracies of Greece and the Fathers of the early church, who found that persecution did not arrest the spread of such opinions, but by producing martyrs tended rather to their extension. Nowadays the tables are being turned, and holders of unusual opinions seek to force them on the community by legislation. It appears that in the United States there is a movement to prohibit the teaching of evolution as applied to man. Legislation to this effect has been proposed in certain States, and the Council of the American Association for the Advancement of Science, at its meeting last December at Cambridge, Massachusetts, thought it necessary to adopt formal resolutions on the subject.[1] The first affirmed that no scientific generalization is more strongly supported by thoroughly tested evidences than that of organic evolution; the second that the evidences in favour of the evolution of man are sufficient to convince every scientist of note in the world, and that these evidences are increasing in number and importance every year. The third resolution affirmed that "the theory of evolution is one of the most potent of the great influences for good that have thus far entered into human experience; it has promoted the progress of knowledge, it has fostered unprejudiced inquiry, and it has served as an invaluable aid in humanity's search for truth in many fields." Finally the Council expressed its conviction that "any legislation attempting to limit the teaching of any scientific doctrine so well established and so widely accepted by specialists as is the doctrine of evolution would be a profound mistake, which could not fail to injure and retard the advancement of knowledge and of human welfare by denying the freedom of teaching and inquiry which is essential to all progress." It was no doubt the existence of this movement to prohibit the teaching of evolution that induced Dr. W. W. Keen of Philadelphia to take "Science and the Scriptures" as the subject of an address he gave at Crozer Theological Seminary last June. He has now expanded the address into a little book with the title, *I Believe in God and in Evolution*.[2] It is dedicated to "all sincere seekers after truth; who revere the Bible as the Word of God; who revere Nature as the work of God; and who believe that, rightly interpreted, they must surely agree." It is a very clear and spirited account of the evidence for evolution from the embryology and anatomy of man and from the history of mankind.

SIR FREDERICK MOTT.

SIR FREDERICK MOTT recently accepted the appointment of honorary director of the pathological laboratories of the Birmingham City Hospitals and lecturer in the University of that city on morbid psychology. He has undertaken to pay frequent visits to Birmingham, where he will have a whole-time assistant director. It is hoped eventually to associate various other mental hospitals in the Midlands with the scheme. The laboratories will be established at first at one of the city hospitals, but the intention is that they shall as soon as possible be transferred to the university buildings, as it is considered very desirable that the staff

[1] The full text of the resolutions was published in *Nature*, March 3rd, 1923, p. 299.

[2] *I Believe in God and in Evolution*. By William W. Keen, M.D. Philadelphia and London: J. B. Lippincott Co. (Cr. 8vo, pp. 100. 1 dol.)

of the psychiatric laboratory shall have the advantage of working side by side with other pathologists. Sir Frederick Mott retires from the office of pathologist to the London county mental hospitals and director of the pathological laboratory on March 31st, and will then cease to be a member of the service of the London County Council. He will, however, continue to act in an advisory capacity at the Maudsley Hospital for a further period of six months. He joined the service of the London County Council in September, 1895. He reached the usual age for retirement four years ago, but for various reasons, chiefly in connexion with the establishment of the Maudsley Hospital, and more recently the setting up of a course of lectures and practical instruction for the Diploma in Psychological Medicine—a proposal in which Sir Frederick Mott took a very active interest, and urged on more than one occasion upon the London County Council—his services have been retained beyond the age limit, greatly to the advantage of the Council's work. He had already won high distinction as a neurologist and pathologist when he was selected for appointment by the Council, as he entered the service at a later age than usual. The Council is proposing, subject to the consent of the Minister of Health, to add six years to his actual term of service for the purpose of computing the superannuation allowance to which he will be entitled on ceasing to be an established officer. The Mental Hospitals Committee has suggested to the Council that the circumstances attending his comparatively late entry into the Council's service constitute a "peculiar professional qualification" which is provided for in assessing pensions under the Asylum Officers' Superannuation Act, 1909. It is also proposed that an honorarium of 250 guineas should be paid him for the services which he will render at the Maudsley Hospital in an advisory capacity from April until October next.

THE REGISTRAR-GENERAL'S STATISTICAL REVIEW.

WE print this week a letter from Dr. Reginald Dudfield containing a detailed criticism of the new form of the Annual Report of the Registrar-General. Dr. Dudfield's eminence as a medical statistician will ensure close consideration of the technical objections he urges against certain changes that have been made. We have ourselves commented upon some of these, and, without endorsing all Dr. Dudfield's arguments, are disposed to concur with his general conclusions. Dr. Dudfield, however, raises issues of importance to others than the members of the unfortunately small class of expert medical statisticians. He appears to hold that the new plan of publication will diminish the utility of the national records for the purposes of the medical officer of health, and in particular refers to the delay which has occurred in publication of the notification statistics. It is possible that Dr. Dudfield is too optimistic in his tacit assumption that other medical officers of health make as good use of the Registrar-General's publications as he does himself. If he is not, we anticipate that his colleagues will also express their opinions upon the expediency of the changes to which he directs attention.

THE SCHOOL OF HYGIENE.

WE referred last week to the preliminary steps that were being taken to provide that the Imperial School of Hygiene, to be erected in London, shall be organized in a manner worthy of the munificent gift of the Rockefeller Foundation. We then mentioned the further act of generosity on the part of the Rockefeller Trustees which will make it possible to appoint a director of the school at an early date, so that he may be able to superintend its building and equipment, and, as we venture to hope, be afforded opportunities of conferring with his future colleagues. The Ministry of Health now announces that the amount the Foundation has undertaken to provide towards the expenses the director must incur and towards his salary is £4,000 a year. The steps that should at once be taken have been discussed between representatives of the Ministry of Health, the University of London, and the Rockefeller Foundation, and it has been decided to set up a transitional executive committee to arrange for co-ordination with other bodies already at work in the same or similar spheres. The names of the members of this committee have not yet been announced. A site for the new college has been acquired in Bloomsbury adjoining the area allotted to the University of London, and it is expected that the building for the college may be ready in about two years. Meanwhile the director will act in an advisory capacity to the transitional executive committee. We propose in an early issue to recur to this matter, which must have a very important direct bearing on the teaching of public health and the investigation of the sciences upon which it depends, and indirectly, we may hope, will react upon the unfortunate position in which post-graduate medical education in London appears to be at the present time.

IRISH MEDICAL SCHOOLS' AND GRADUATES' ASSOCIATION.

THE forty-fifth annual general meeting of this society was held on March 17th (St. Patrick's Day) at Pagani's Restaurant, when Dr. J. A. Macdonald resigned the Presidential Chair to Sir William Taylor, Regius Professor of Surgery, Dublin University. The report for the past year states that the usual three gatherings had been exceptionally well attended, the numbers at the luncheon during the Glasgow meeting of the British Medical Association being a "record." The winter gathering in London last November took place, in accordance with the new rule, during the week of the General Medical Council meeting in London and afforded thus an opportunity for Irish representatives on that Council to meet old friends and pupils practising in England. The Council expressed the great regret caused by the deaths of Sir Charles Ryall, Colonel Talbot Beamish, and its late honorary secretary, Dr. Walter J. Ronan. Death had also deprived them of one of the few remaining foundation members, Dr. J. Shaw Lyttle, formerly of Pontypridd. The Arnott Memorial Gold Medal for this year has been awarded to Dr. Gordon M. Holmes. The festival dinner took place after the meeting, the President occupying the chair, and was attended by 169 members and their friends. After the loyal toasts had been honoured the toast of "Our Defenders" was proposed by the President-elect, Dr. W. J. Corbett, and responded to by Colonel George A. Moore. The toast of "Our Guests" was given by the Chairman of the Council (Dr. Gubbins Fitzgerald), and that of "The President" by Dr. William Hill. Sir William Taylor, in his reply, said the society was showing, by the harmony that existed between those Irishmen and Irishwomen who held such different views both as regards politics and creeds, that the *mens medica* smoothed away obstacles to camaraderie even in Ireland.

THE CENTENARY OF THE "LANCET."

THE *Lancet* concludes the hundredth year of its existence in October next, and it is proposed to hold a dinner in celebration of the event. The movement has received the support of Sir Charles Sherrington (President of the Royal Society), Sir Donald MacAlister (President of the General Medical Council), Sir Humphry Rolleston (President of the Royal College of Physicians of London), Sir Anthony Bowlby (President of the Royal College of Surgeons of England), Sir George Newman (Chief Medical Officer, Ministry of Health), Sir William Hale-White (President of the Royal Society of Medicine), and Lord Dawson of Penn (President of the Medical Society of London). The dinner will be held in London in the late autumn. Dr. J. H. W. Laing and Mr. H. D. Gillies, 7, Portland Place, London, W.1, are acting as honorary secretaries.

MEDICAL SOCIETY OF LONDON.

THE one hundred and fiftieth anniversary of the Medical Society of London, founded by Lettsom in 1773, will be celebrated on May 15th by a dinner to be held at the Hyde Park Hotel. His Royal Highness the Prince of Wales has graciously signified his intention of being present. A gathering widely representative of the medical profession is expected, and there will be distinguished guests. Lord Dawson of Penn, President of the Society, will preside. The Medical Society of London is the oldest medical society in England. Scotland can boast of an older—the Royal Medical Society, Edinburgh, founded in 1737.

DR. JOHN S. ANDERSON has been appointed to the Chair of Medicine at the University of Hong Kong. Dr. Anderson had a distinguished career at Glasgow University, and during the war served in Gallipoli, Egypt, and Palestine. Later he joined the staff of the Helminthological Department of the London School of Tropical Medicine and became a member of the Commission which visited British Guiana and the West Indies in 1921.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Dangerous Drugs Act, 1920.

DR. CHAPPLE, at the end of ordinary questions on March 19th, raised a point of order which appeared to him to be of considerable importance, involving, as it did, an encroachment upon the rights and privileges of the House. The late Home Secretary issued a draft regulation amending the Dangerous Drugs Act of 1920. He issued it on August 3rd last, and the forty days under the Rules Publication Act expired on September 12th. That regulation had had practically the force of law ever since, so that nearly six months had elapsed, during which time a regulation issued by the Home Secretary on August 3rd had practically had the force of law. Section 5 of the Rules issued under the Dangerous Drugs Act, 1920, was to the effect that no practitioner could prescribe for himself any drugs mentioned in the Schedule, such as cocaine and morphine. Section 11 of the Dangerous Drugs Act required that any regulations under that Act should be laid forthwith, but this regulation was not laid until March 1st. Therefore a law had been practically made by the Department and had not been ratified by the House. It ought to have been laid on September 12th last, but it was not laid until March 1st. He asked whether that was not an irregularity, and whether the regulations ought not to be withdrawn. At present it appeared that the Home Department could issue regulations and allow any time whatever to elapse during which time the regulations had the validity of law. Was that an irregularity with which Mr. Speaker could deal?

Dr. Molson associated himself with what Dr. Chapple said. The British Medical Association protested last July against this regulation. The regulation had been carried into force without the consent, authority, or knowledge of the House. It limited the power of duly qualified medical practitioners to prescribe for themselves. He considered that that had been done in an irregular way.

The Speaker replied that it was not for him to say whether the action of the Department had been legal or not. This did not appear to him to be a point of order, but a point of law. If any irregular action had been taken by the Ministry, then he imagined that any honourable member, or anyone who had been harmed by such action, had the courts of law open to him. If the regulations were laid on a certain date—he thought it was February 2nd——

Dr. Chapple remarked that the regulations were promulgated on October 2nd last.

The Speaker said they were laid during the present session of Parliament, and the number of days, so far as he was concerned, dated from that time. What happened in the interval might be a legal question, but it was not a point of order upon which he could express an opinion.

Army Medical Services.

We published last week (p. 482) the passages in the Memorandum of the Secretary for War which dealt with the Army Medical Services. In the course of the debate on the Estimates, on March 15th, Dr. F. E. Fremantle expressed his gratification that there was an increase, though only slight, in the provision for the Army Dental Corps. Medical officers who had served during the war knew how vital dental work was and how fruitful a source of invaliding and inefficiency was the absence of proper dentistry. Very frequently insufficient provision for the dental condition of the troops, and the recruit in the first instance, resulted in the loss of enormous sums of money, due to the fact that they had to be invalided through troubles of digestion and nutrition which arose through defective teeth. It had been difficult to get a sufficient number of dental surgeons during the war, because qualified dental surgeons were not numerous. When it was decided, as a new departure in the permanent army, to have a certain establishment of dental surgeons, those who had served so well were encouraged to join permanently; eighty-three did join, but the gratuity promised to them when they left the service was withheld if they entered the permanent service. The British Dental Association had appealed to the War Office, but the Army Council had repudiated the agreement made under Instruction 131. Turning then to the problem of the Army Medical Corps of the Territorial Army, Dr. Fremantle said that the original idea was that in all the reductions the cadre of all the different units should be kept up, so that in the event of war—as in the case of the late war, thanks to the scheme initiated by Lord Haldane—there could be complete expansion. One of the chief requirements for expansion was the availability of big general hospitals. As regards the ordinary technical medical and surgical work, the general hospital could in war obtain the necessary staff from civil practitioners. The real requirement was the military organization of the hospital to make the organization work smoothly. The establishments should be kept up in peace time in such a way that they might be able to get to work at once. The nucleus of the Territorial Army medical units was the general hospital. These units had been cut down. Instead of fourteen Territorial general hospitals, there were now only three—one in London, one in Edinburgh, and one in Manchester. It would be infinitely better to have the cadres of ten big general hospitals in the big centres in order that a fresh set of medical officers might have training in the organization and running of a hospital. There was something wrong in regard to the Royal Army Medical Corps. Since the South African war it had held a very high position; in fact, among the medical services of the Crown it had attained to the premier position. But when the last examination was held for fifteen vacancies in the corps, there were only four applicants, and only three passed the test. All four were, however, given commissions, and the remaining eleven commissions were left vacant. He could not understand the falling off in the popularity of the corps; but he imagined that some of the conditions did not correspond sufficiently well with the prospects in civil life, and that that was one of the results of economy. He favoured economy, but the Army Medical Corps must be saved. The man who was responsible for the whole medical service and that connected with the health side of the army work should have a seat on the Army Council. The Esher Committee declined to recommend this, its objection being that the Army Council was already large enough. But, as a result of the war, Lord Esher had reversed his opinion. In conclusion, Dr. Fremantle touched on the question how far the co-ordination of the services (the Army, the Navy, and the Air Force) would affect their Medical Services. The Cabinet Committee, under, he believed, the chairmanship of Sir Alfred Mond, did report, as he understood, last summer, on this subject. But when he asked if the report would be published he received no reply. He pressed this question again, because the publication would be of great value. He allowed that possibly the fusion of the Medical Services could not be affected very much in advance of the general fusion of all the fighting forces, but it was bound to come, and the sooner the better.

Lieut.-Colonel Guinness (Under Secretary of State for War), replying to the discussion, said his answer to the appeal that the Director-General Army Medical Service should be a member of the Army Council was that members of the Army Council had never sat as representatives of particular groups or kinds of soldiers. They sat as representing groups of functions. It was true that there were instances in the War Office organization which seemed to support the opposite principle, such as the Director of Supplies and Transport, the Director of Engineering, the Master-General of the Ordnance, who were each of them virtually commandants of certain corps and administered the personnel. If representation was to be given on the Council to the Territorial Army, as one M.P. had suggested, and to the Royal Army Medical Corps, as Dr. Fremantle had urged, the same claim would soon be made for the Royal Engineers.

Dr. Fremantle (interposing) said that was just the mistake which was constantly being made and against which he contended. He desired that the Director-General

of the Royal Army Medical Corps should be on the Council to represent the health services which functioned throughout the army. The Director-General was responsible for the whole of the health services in all parts of the army administration.

Lieut.-Colonel Guinness said he quite realized that a good many people held the view just expressed, but he suggested that all these matters could best be considered by such a committee as that under the chairmanship of Lord Weir, which was going into the whole of the establishment and the organization which controlled it.

Nurses' Registration Act.

Major Barnett, on March 14th, moved for an address to His Majesty for the modification of the Schedule to the Nurses' Registration Act, 1919, for the election of the General Nursing Council for England and Wales. He submitted proposals for some forty amendments to the scheme, but said that there were only three of substance. The first dealt with the qualification of the people who should represent the registered nurses on the Council. In the debates in the House on nurses' registration two points received great stress. One was that nurses should be raised to the status of a profession, and the second that they should be independent in the choice of their representatives. The matrons were a very distinguished body of women, and he did not wish to deprive them of the privilege of being elected members of the General Nursing Council. But under the scheme it was laid down that six of the eleven representatives of the registered nurses should be past or present matrons. The amendment he put forward was that the registered nurses should elect eleven nurses to represent them, and that they might be matrons or not. This followed a precedent set in Scotland. The second point was to make the time between the date of the dispatch of the voting papers and polling day twenty-one days instead of seven. The other amendment dealt with the powers of the returning officer, who, under the rules, was able to sit in judgement on his own mistakes.

Mr. Neville Chamberlain, in reply, said that during the short time he had been in office it had been impossible for him to make adequate investigation into this matter. But if the motion were withdrawn he would undertake to request the General Nursing Council to consider the amendments put forward, and to draw up and submit to him such alterations as the Council might be prepared to make within the next twelve months. These alterations, if approved by him, would be laid on the table and open to discussion. Major Barnett expressed his willingness, in the circumstances, to withdraw the motion.

Small-pox in London.—Mr. Rhys Davies asked, on March 14th, whether during the recent small-pox "scare" in London any intimation was sent to medical officers of health on the subject of closing of business premises in the event of small-pox occurring thereon. Mr. Chamberlain replied that the only communication traceable was a statement in answer to an inquiry by a firm of solicitors that the Department was not aware of any statute or regulation empowering the Minister of Health to order the closing of a factory wherein cases of small-pox had occurred. The question whether it was or was not desirable to advise the closing of a factory on account of the occurrence of cases of small-pox rested with the medical officer of health of the district. In reply to Mr. Frank Lee Mr. Chamberlain said that the medical officers of the Ministry who advised in regard to the diagnosis of suspected cases of small-pox were those who had considerable experience of that disease, and in forming an opinion as to the nature of the illness they took into account all known factors, including the vaccinal condition of the patient. Mr. Frank Lee desired information as to the report of the Departmental official who made an investigation in Derbyshire. Mr. Chamberlain said that such reports were intended to be confidential, and he did not propose to publish the reports made by medical officers of the Department as to this outbreak. He was advised that the isolation of contacts was not generally necessary either in the interest of the contact or for the protection of the public unless or until the contact developed the disease. Mr. Spencer asked whether the reports were available to the council or councils interested. Mr. Chamberlain said that they were not; the reports were confidential to the Department.

Maximum Size of Panels.—Mr. Chamberlain informed Mr. Burgess, on March 14th, that while the maximum number of patients for whom an insurance practitioner working single-handed might accept responsibility was 3,000, the Insurance and Panel Committees had power to fix a lower number as the limit for that particular area or for any portion of it. The extent to which the number might be increased in a case of a practitioner employing a permanent assistant was a matter within the discretion of the local committee. The information available indicated that in general the employment of an assistant was held to justify the increase of the number by about 50 per cent. Mr. Pringle observed that the numbers given were not of patients but only of potential patients; there was only a small number of actual patients in the total.

Medicines for Panel Patients.—Sir W. Sugden asked, on March 14th, what steps were being taken to ensure fit and proper medicines being supplied to panel patients where the price of such medicines was higher than the sums allowed in the contract. Mr. Chamberlain replied that the cost of medicines for insured persons was not subject to any such limit as was suggested. Insurance practitioners were required to order for their patients such medicines as were necessary for their proper treatment without limit of price, though it had been found necessary to take certain precautions against extravagance in prescribing. Mr. R. Richardson asked, on the same day, if the Medical Subcommittee of the Durham County Insurance Committee had recently fined medical practitioners on the panel for alleged excess in the cost of drugs given to panel patients, asserting that drugs of a less expensive character should have been given and that medicine should have been ordered to have been given at greater intervals; and whether the Minister of Health would have inquiries made into this with a view to the proper treatment of persons suffering from ill health. Mr. Chamberlain replied that the withholding of remuneration on the ground of excessive prescribing was settled by the Insurance Committee, which received independent advice from the Panel Committee. He had not yet received the reports of the particular cases to which Mr. Richardson referred, but he had no jurisdiction to review the Insurance Committee's decisions unless the doctors concerned exercised their right of appeal to him. There must be some safeguard against extravagance in prescribing, but the present arrangements were not working well and were under revision.

Pensions Administration Cost.—In a written answer to Sir John Collie, on March 9th, Major Tryon stated that the estimated total cost of administration of the Pensions Department (including committees) for the financial year ending March 31st was £4,180,000, of which £1,110,000 was for medical services. The cost of sessional fees for boarding during the current financial year was estimated at £450,000. Salaries of medical officers could not be readily apportioned as between boarding and treatment duties. The number of whole-time medical officers employed on August 1st, 1921, and on February 1st, 1922, were 623 and 605 respectively. Of these, 315 and 289 were employed in institutions. The number of medical boards of any kind varied from day to day, according to requirements, but the average number of three-men boards was about 170 a day. All cases coming up for resurvey were now examined by two-men boards.

Death Certification.—At the instance of Mr. Snell, on March 14th, Mr. Chamberlain gave the following particulars of the registration of deaths during the last five years:

Deaths Registered.

	On Medical Certificate.	On Coroner's Certificate.	Uncertified.	Total.
1918	570,735	33,012	8,214	611,991
1919	466,068	31,483	6,698	504,254
1920	429,456	31,011	5,663	465,130
1921	424,166	29,304	5,240	458,710
1922	450,996	30,346	5,487	486,829

Houses Unfit for Habitation.—Mr. Neville Chamberlain stated, on March 14th, that reports received from medical officers of health for 1,060 boroughs and urban districts for the year 1921 showed that 994,005 houses were inspected under the Public Health Acts and Housing (Inspection of Districts) Regulations. Of these, 13,279 were reported unfit for habitation and 226,713 not in all respects reasonably fit. Notices were served under the Housing Act of 1919 in respect of 30,813 houses, and of these 23,453 were remedied by the owners and 912 by the local authorities. Notices were served under the Public Health Acts in respect of 266,549 houses; in 240,310 of the houses concerned the defects were remedied by the owners and in 2,757 by the local authorities. Closing orders were made in respect of 1,416 houses, while in the case of 287 houses closing orders were ended after the houses had been made fit. There was no information as to the population inhabiting these houses.

Answers in Brief.

Major Tryon has stated that there are approximately 800 service patients in the mental hospitals of the London County Council. Payment for the cost of their maintenance and treatment was made by the Pensions Ministry direct to the medical superintendents of the hospitals. During treatment pension was suspended and the allowances authorized by Article 6 of the Royal Warrant were granted.

The difference between the number of State-assisted houses completed up to February 1st and the gross estimate of shortage due to overcrowding according to the survey was 312,595. Information is not available as to the number of unsubsidized houses built since 1919, and the figures given are not to be taken as giving the present effective demand for houses.

The Home Secretary has stated that the alleged increase of drunkenness from the consumption of methylated spirits has been under the consideration of the Home Office for some years, but it was not a matter in which he had any powers. He understood that it had not been found practicable to make the spirit more unpalatable.

Mr. Chamberlain has informed Mr. Hayday that the work of public vaccinators was periodically inspected by medical officers of the Ministry of Health. The Royal Commission on Vaccination had said, as regards the protection afforded, that though in all cases it was not the same, if a period was to be fixed, they thought it might fairly be said to cover in general nine or ten years.

Regulations to prescribe standards and labelling for imported condensed milk have been prepared by the Ministry of Health, and notice of intention to make them, subject to the consideration of representation by any public body interested, has been given in the *London Gazette*.

Nova et Vetera.

A TIBETAN ANATOMICAL CHART.

AMONG the trophies of the second Mount Everest expedition is an anatomical chart brought back by Captain J. B. L. Noel from a Tibetan monastery at Gyantse, in the mountainous regions between Darjeeling and Lhasa. Captain Noel was the official photographer to the party, and his wonderful cinematograph films have been shown in London and more recently in the large cities of Scotland and the North of England. We are indebted to him and the Mount Everest Committee for the opportunity to reproduce a photograph of this chart in our columns.

Picture-scrolls, or *tankas*, are common features of the monasteries of Tibet; they are either hung on the walls or kept rolled up in pigeon-holes. This one is painted in water colours on some kind of prepared canvas, and has evidently been rolled up for a long time, for its outermost surface is much discoloured; it measures some 24 inches by 16 inches. The drawings are enclosed in a gay red and yellow border; the anatomical figures are coloured diagrammatically, red and pink predominating; the background is lightly washed in with blue above and green below. Dr. A. F. R. Wollaston, who was medical officer and naturalist to the first Mount Everest expedition in 1921, informs us that he saw several anatomical charts like this in Tibet, but none so complete. It has been examined by Dr. Frederick W. Thomas, Librarian to the India Office, whose knowledge of Tibet and its language has helped us greatly in compiling this note.

The writing on the picture is in a neat cursive form of the Tibetan script adopted from the Hindus in the seventh century A.D. The letters are thus akin to the Indian Sanscrit characters of that period, and therefore read from left to right. The letters of the running script differ from those of the formal, or sacred, script in being "unheaded" and less ornamental.

In general Tibetan medicine, like Tibetan writing, is based on the Hindu, with perhaps some admixture of Chinese. The legend at the foot of the picture informs the reader that the chart illustrates a chapter from the well known medical treatise called *Vaidurya-snon-pohi-phreng-ba* (The blue beryl necklace, or String of blue jewels). The *Vaidurya* appears to be a commentary on the four medical authoritative texts, or *tantras*, ascribed to Buddha in his capacity as the great physician. The particulars filed by Dr. Thomas in the library of the India Office show the *Vaidurya* to be a large and exhaustive work of 1,000 leaves, each printed on both sides, the whole forming a complete system of the science and art of medicine.

There is no clue to the age of the picture; it may be anything from 50 to 300 years old. The anatomical details are crude and fanciful; they are indeed rendered with a spirited disdain for accuracy; they bear out Garrison's observation that Hindu medicine was particularly weak in its anatomy. Like the pre-Vesalian anatomical drawings of Europe, this Tibetan chart bears little evidence of original observation or dissection. It has rather the appearance of being the work of a skilled copyist working to a traditional pattern and adding such artistic flourishes as his fancy directs. "These strange didactic pictures have all been interpreted by Sudhoff as side-lights on the almost stationary character of the mediaeval mind."*

According to the key lettering the mountainous object in the top left-hand corner represents the lungs and heart; and this conventional rendering is repeated in the thorax of the squatting figure below. The upright skull-faced figure is flanked by a small liver with a large gall bladder (this is painted yellow) showing beneath its lower border, and another larger gall bladder detached from its surroundings. In the upper squatting figure the intestines are shown in two zones labelled upper and lower, and the crura of the diaphragm are indicated. In the posterior view of the upright figure the kidneys are turned outwards and shown in section, their sites being indicated in the flanks; above the left kidney appears an isolated spleen, which is coloured mauve in the original. It will be noted that the patella appears in both the front view and the back view, and the spinal column is represented as consisting of twenty-seven pebble-shaped vertebrae. The coiled object in the centre of the picture to the left of the middle line is intended to represent the stomach and intestines. In each of the central squatting figures the thorax is decorated with a great deal of information.

We learn from Mr. C. J. S. Thompson, Curator of the Wellcome Historical Medical Museum, that that collection possesses several coloured drawings, reproduced from a Tibetan manuscript, depicting anatomical subjects. The original scroll, ascribed to the fifteenth century, is preserved at the Bibliothèque Nationale in Paris.

Some account of the anatomical knowledge and medical practice of Tibet has been given by Dr. Heinrich Laufer in his *Beiträge zur Kenntniss der tibetischen Medicin* (Leipzig, 1900), and in another pamphlet published in the same year at Berlin. Lieutenant-Colonel L. Austine Waddell, I.M.S.(ret.), formerly professor of Tibetan at University College, London, in his work *The Buddhism of Tibet*, speaks of the very popular form of Buddha representing the god as "the supreme physician" or Buddhist Aesculapius; this, he says, was probably founded upon the legend of the metaphysical Bodhisat, "the medicine king." Aesculapic pictures or medical Buddhas are much worshipped in Tibet, and are supposed to cure by sympathetic magic. This circumstance may account for the squatting Buddha-like attitude of four out of the six figures in the anatomical chart.

* Fielding H. Garrison, M.D., *Introduction to the History of Medicine*. Third edition. 1921.

England and Wales.

LIVERPOOL MEDICAL INSTITUTION.

A SPECIAL general meeting was held on March 13th to receive the report of the Revision of Laws Committee which had been accepted and approved by the Council. The President, Dr. J. Hill Abram, occupied the chair, and there was a moderate attendance of members. An interesting discussion centred around the use of the word "institution" representing the corporate assembly of members and the building in which they met. This twofold signification gave rise to excursions into the history of the medical profession in Liverpool, the etymology of the word "institution," and the various meanings attached to the word by the *New Oxford Dictionary*. It has been ascertained that the first association of medical men in Liverpool had for its object the formation of a medical library. In 1779 out of this Medical Library Society arose a society called the Liverpool Medical Society, and, as far as the records go, this society was the most important at that period. In 1837, through the untiring efforts of Dr. John Rutter, the Liverpool Medical Institution was erected with the express object of housing the library, the pathological museum, and providing a place for medical men to meet and discuss matters of medical interest. Up to 1840 the word "institution" was used solely to designate the building, and chosen in preference to the word "hall." Owing to friction between the trustees of the building and the associations that used it, an arrangement was made whereby the building was taken over by the united associations, of which the Liverpool Medical Library Society was the most important. It was then the word "institution" received its second meaning, and, incidentally, the term "Liverpool Medical Society" passed into oblivion. It was felt by those who knew and had studied the past medical history that the phrase "Medical Society of Liverpool" might be with advantage substituted and thus preserve the continuity from 1779 down to the present. In so doing, the word "institution" would be confined to its original designation, and the corporate body of members meeting within its precincts be styled the Medical Society of Liverpool. The majority of the members present were averse from change and determined to continue the use of the word "institution" in its twofold signification, leaving the context of the laws to reveal which meaning was the correct one. A new law referring to life members was unanimously adopted. Its object is to free from subscription any associate or member who has completed fifty years of membership of the institution. The clause referring to the ineligibility of persons practising homoeopathy or of those who assume any designation implying special principles or methods in the practice of their profession was unanimously deleted. It was felt that the method of electing members was in itself sufficient to safeguard the objects of the institution.

BIRMINGHAM GENERAL HOSPITAL.

The board of the General Hospital, Birmingham, in consonance with other large hospitals throughout the country, has instituted an Extern Midwifery Department. For those who know the location of the hospital the wisdom of this step will be obvious; for those who do not, it may be said that the hospital is situated on the edge of a very impoverished district, where confinements are necessarily fraught with great risks to mother and child. The limits of the "district" to be served by the new department have been fixed to extend to a radius of a mile and a half from the institution. This will include the worst slum area in the Midlands, and it is felt by the board of the hospital that much good work can be done amongst the overcrowded population it harbours without in any way prejudicing the interests of other bodies or individuals. The department is under the direct control of the honorary obstetric staff of the hospital, under whom are the obstetric house-surgeon, a specially trained sister, and certain nurses—specially selected by the matron—who have completed their full course of general training. To secure the services of the department the patient applies to the registration office of the hospital and pays a nominal registration fee of 15s. This figure is much lower than the fee it would be necessary to pay, in the ordinary way, to engage competent attendance at the confinement, and should be within the scope of many who have hitherto had to rely on unskilled assistance. Not only this: the fee is comprehensive, entitling the patient to treatment for all complications arising out of pregnancy from the day of registration. Thus a case of too great difficulty to be managed at home would be taken into the hospital, where the confinement could be conducted under safe conditions. Registration early in pregnancy will be encouraged so that ante-natal treatment may be given whenever necessary; it is the aim of the hospital to develop this aspect of the scheme to its fullest extent. In spite of the modesty of the registration fee it is calculated that it should cover the working expenses of the department. During the past decade great advances have been made in private obstetric work, and the certificated midwife of to-day is, as a rule, very competent. Pregnant women also are becoming more aware of the risks associated with their condition, and the grave menace of incompetent help during labour. Thus a favourable reaction is set up which makes for better service. But improvements of this kind do not lessen the cost to the patient, and to the class of people inhabiting the slum covered by this scheme the new Extern Midwifery Department should prove to be of incalculable benefit.

POST-GRADUATE LECTURES AT BIRMINGHAM ON CRIME AND MENTAL DEFECT.

The Faculty of Medicine of the University of Birmingham has arranged another course of post-graduate lectures and demonstrations on crime and punishment. The course will begin on May 7th and end on May 19th. The lecturers will be Dr. W. A. Potts, who will treat of the subject with special reference to mental defect; Dr. Percy Hughes, who will consider it in relation to insanity; and Dr. Hamblin Smith, who will deal with the subject generally. There will be demonstrations at the Barnsley Hall Asylum by Dr. Percy Hughes, at the Mental Deficiency Office and Barr Hall Colony by Dr. Potts, and at H.M. Prison by Dr. Hamblin Smith. The fee for the course is five guineas. Full particulars can be obtained from the Dean of the Medical Faculty, Mr. W. F. Haslam, F.R.C.S., the University, Edmund Street, Birmingham. As will be seen from the advertisement on another page, the course will not be held unless sufficient entries are received.

POOR LAW OFFICERS' REMUNERATION.

The Minister of Health has issued a Circular (382 of March 15th, 1923) to Poor Law authorities dealing with the procedure to be adopted for obtaining the Minister's approval of the remuneration of Poor Law officers. In Circular 223 of 1921 it was laid down that, in the absence of any proposal for an increase in salary, no statement of expenditure need be submitted to the Minister. The present circular emphasizes the fact that the approval of the Minister is no longer required for the appointment of Poor Law officers, unless the proposed remuneration exceeds that already sanctioned for the previous holder of the office, or the person proposed to be appointed lacks one of the qualifications prescribed by the regulations or (in the case of a whole-time office) has had no previous experience in the Poor Law service.

The circular contains no new provision. Its chief interest lies in the following explicit statement of the existing position as regards the security of tenure of Poor Law officers, necessitated, presumably, by the attitude adopted recently by certain authorities with regard to retrenchment:

"... Nothing in this procedure will affect an officer's security of tenure or other conditions of service prescribed either by the Regulations or by the terms of his appointment. It will not, for example, be competent for the authority to dismiss without the consent of the Minister an officer entitled under the Regulations to permanency of tenure. When a salary within the approved limits has been assigned to an officer by a resolution of the authority, it will not be competent for them to reduce such salary without his consent during his legal continuance in office."

THE WILLIAM SHEPHERD HOSPITAL BEQUESTS.

The late Mr. William Shepherd, a builder and large property owner in the City of London, left the residue of his estate to be distributed to London hospitals by his executors; having realized a portion of the estate they have now distributed £96,500 as follows:

£35,000 to Guy's Hospital to finance the erection and completion of the new massage department and extension of the nurses' home, to be named "The William Shepherd House."

£25,000 to the Bolingbroke Hospital for the erection and completion of a wing to be named after the testator.

£20,000 to St. Thomas's Hospital for the erection of dining and recreation rooms for nurses in the hospital, the new building having a flat roof to provide a playground for children patients in the wards.

£6,000 to the Belgrave Hospital for Children, for the purpose of continuing the erection and completion of the south wing, which will provide two large additional wards, together with extra accommodation for nurses on the upper floors.

Sums of £1,000 have been apportioned to the following London hospitals for the endowment of beds to perpetuate the memory of the testator: The City of London Hospital for Diseases of the Chest, the Middlesex Hospital, the Hampstead Hospital, Charing Cross Hospital, St. Mary's Hospital, St. George's Hospital, the Evelina Hospital for Children, the Miller General Hospital, the Royal Free Hospital, the Westminster Hospital.

In addition, the sum of £500 has been given to the St. Monica's Hospital.

Mr. H. P. Shepherd, C.C., the testator's son, and one of the executors, has in many cases been appointed a governor of the hospitals to which help has been granted.

Scotland.

A "MAINTENANCE SYSTEM" FOR SCOTTISH HOSPITALS.

SIR GEORGE BEATSON'S pamphlet, *The Scottish Voluntary Hospitals*,[1] is an interesting exposition of a financial proposal for relieving the difficulties of voluntary hospitals, called the "maintenance system" of finance. Sir George regards the abbreviated expression "voluntary hospital" as indicating a hospital that is supported by voluntary contributions, and considers that the definition embodies the elements of gratuitous support and service. These hospitals, he says, are indirectly an outcome of the Poor Laws. The Act of 1601 directed that provision should be made for the sick poor. The management of the infirmaries established and the care bestowed on the sick poor were so lacking in humanity that great public resentment was created; and the growth of human compassion in the eighteenth century led to the establishment of many voluntary hospitals for the necessitous sick poor.

Times, however, have changed. A humanitarian spirit has permeated the official world; Poor Law hospitals have now all that can be desired in the way of equipment, comfort, and skilled treatment, and the voluntary hospitals are now providing for the needs of sections of the community other than the necessitous sick poor. But the managers of voluntary hospitals are trying to meet the increased expenditure due to modern methods of treatment by collecting money for the deserving poor while utilizing the money so collected in giving what is practically indiscriminate charity to members of the community, many of whom are able to pay for treatment. Through these changes an embarrassed position has been brought about in voluntary hospital finance; and this position must be met by a change in the financial arrangements, since voluntary hospitals must be continued for two reasons—first, because they perform a widespread social service, and secondly, because they carry on a great educational work which benefits all classes of society.

Sir George Beatson is of opinion that the following requirements should be met by any new financial system:

1. It should allow for contributions being made by all classes of the community, as all are benefited by the voluntary hospitals.
2. It should continue the present excellent system of voluntary service by the medical staff, unpaid.
3. It should bring in an assured income without the hospital having to depend on recurrent appeals.
4. It should carry with it an element of permanency.
5. It should not open the door for interference with the control of the hospitals, as by any special body of contributors.

He considers that these requirements would be met under an arrangement by which the maintenance of the hospital itself (management, buildings, rent, taxes, salaries, wages, etc.) would be borne by the general public, through charitable gifts, legacies, and so on, while the maintenance of the patients (provisions, drugs, and dressings) would be borne by the patients themselves, either personally or through benefit societies. To this plan he applies the name "Maintenance System."

An analysis is given of the accounts of the Glasgow Royal Infirmary to show that about two-thirds of the annual expenditure is incurred for the maintenance of the hospital itself, and one-third for the maintenance of patients. Sir George Beatson quotes figures to show that in Scotland treatment in hospital for an average of twenty-one days would cost the patient £3 18s. 9d. in surgical cases with operation, £2 17s. 9d. without operation, and £2 6s. 9d. in medical cases. The hospitals would maintain a certain number of endowed beds for deserving necessitous patients. It is proposed that the maintenance system of finance should be carried out by some scheme of insurance, it being understood that any such insurance must be arranged by the applicants themselves and not by the hospitals, as no hospital should take upon its shoulders the risks of an insurance company. It is suggested that the various "contributory schemes" and the "Hospital Savings Association" should take up this work of insurance, forming themselves into hospital treatment insurance societies, prepared to meet the maintenance charge for their members when in hospital, and abandoning their present propaganda, which seems likely to undermine the voluntary principle in hospitals in various ways. It is recognized that an "income limit" would be necessary for admission, and the hospital authorities would, of course, be the sole judges as to the suitability of a case for treatment in hospital. Sir George Beatson claims the following advantages for the maintenance system of hospital finance:

1. It gives an opportunity for combining public help from charitable subscribers with self-help by the patients themselves, so that all classes will contribute to the support of hospitals, from the existence of which all are benefited.
2. It would do away with the "open-door" principle of admission, and establish relations on a fixed business-like basis between the voluntary hospitals and the working and lower middle classes.
3. It would help to foster thrift, which is distinctly discouraged by the present voluntary hospital system.
4. Under the system there will be no grounds for medical men claiming remuneration for the services they render, because the hospitals will be receiving no payment for treatment. This is qualified in respect of any work carried out for the State or municipality, in which case remuneration for the medical men doing the work would be included in the charges.
5. An assured annual income would be received by the hospital, coming in weekly, monthly, or quarterly as arranged, thus freeing the hospital from embarrassment in meeting its running expenses.
6. The system furnishes no loophole for invasion of, or interference with, the control of the hospital.

Such advantages cannot, Sir George Beatson considers, be claimed for the contributory schemes for employees now being developed, schemes which open the door to "class interference" in the management of hospital affairs, and are not unlikely to lead in the end to State control. Sir George desires that the voluntary hospitals should recognize that their function now is to help a deserving class of the community whose means debar them from obtaining in serious illness modern expensive methods of treatment and nursing, and that the benefits they bestow should be obtainable, except in absolutely necessitous cases, only by those who are prepared to contribute on the principle of self-help.

In his preface Sir George Beatson, who has worked in hospitals for over fifty years, and been on the surgical staff of a hospital with a large medical school for thirty-two years, states, with a touch of dry humour, that he offered to place his views before Lord Cave's Committee, but that the offer was not accepted because only witnesses with experience in hospital matters were desired.

CHARITY IN MEDICINE AN ANACHRONISM.

At the annual meeting of the Odonto-Chirurgical Society of Scotland, held in Edinburgh, a discussion on "The necessity for co-operation between the different branches of the medical profession" was opened in an address by Dr. J. S. Fraser, F.R.C.S.E. The lecturer held that the hope of progress lay in the co-operation of specialists in the different branches. He held that charity in medicine was an anachronism and that patients should be treated because they were human beings and citizens, not because they were poor. Discussing hospital treatment, he pointed out that the middle classes, especially the lower middle classes, were worse off than anybody else. The wealthy classes could afford to go to numerous West End specialists and obtain the opinion of each one upon their cases, though even this was not ideal, because the patient laid most stress upon the symptoms which he thought would be of most interest to the particular specialist he was visiting. On the other hand, the poorest classes had the general hospital to go to. The lower middle classes fell between two stools, because they could not afford numerous private consultations and did not care to go to charitable hospitals. Probably the best solution of all would be to have only one hospital, a general hospital, with paying wards attached to each department, as in America. In Edinburgh there were far too many little nursing homes which were not economic

[1] *The Scottish Voluntary Hospitals: A Financial Reconstruction Scheme.* By Sir George Thomas Beatson, M.D., K.C.B., K.B.E., D.L., Consulting Surgeon, Glasgow Western Infirmary. Glasgow: John Smith and Son. (Med. 8vo, pp. vi+18. 6d.)

units, but were run under the system of private enterprise. A possible solution of the problem might be the establishment of a local health rate after the analogy of the education rate. For Edinburgh it had been calculated that this might amount to fourpence in the pound of rental, but the lecturer held that this would be only a beginning and that it would rise.

LETHARGIC ENCEPHALITIS IN EDINBURGH.

Seven deaths from encephalitis lethargica have occurred in the Edinburgh Royal Infirmary in the past month, and there have been several cases in other hospitals. Of the deaths in Edinburgh, 5 were in men over 40 years of age and 2 in women of 29 and 24 years respectively. Children have been affected, generally speaking, in a milder degree. In most of the cases mental disorder has been the most prominent early symptom, followed later by third and seventh nerve paresis, the lethargy being of later development. The most effective treatment appears to have been some form of vigorous counter-irritation such as turpentine hypodermic injection for the production of an abscess in some indifferent region like the outside of the thigh. This usually produces striking amelioration of the symptoms. It not only causes a marked local reaction with leucocytosis, but presumably relieves the cerebral congestion which is the outstanding morbid anatomical feature of the disease.

END OF WINTER SESSION.

The winter session of Anderson College of Medicine, Glasgow, closed formally on March 15th, when an address was delivered by Sir John Bland-Sutton, F.R.C.S., LL.D. The subject of the address was "The choroid plexuses and ventricles of the brain as a secreting organ," and it was listened to with great pleasure by a large audience of students and teachers. The Chairman of Governors of St. Mungo's Medical College, Glasgow, Mr. James Macfarlane, LL.D., presided at the closing meeting of the winter session on March 15th. He referred to the large numbers of students attending the College and to its continued prosperity as a teaching centre. After the various prizes, medals, and certificates had been presented to the successful students, Sir John Reid, K.B.E., gave a short address.

BEQUESTS FOR CANCER RESEARCH.

Mrs. Constance Armstrong, widow of the late Captain Armstrong of the Royal Mail Steam Packet Company, left the greater part of her fortune to be distributed to hospitals and institutions directly or indirectly assisting sufferers from cancer. The trustees of her estate have allocated £1,600 to the Caird Cancer Wards, Dundee Royal Infirmary, and £1,600 to the Imperial Cancer Research Fund, London.

AFTER-CARE OF BLINDED SCOTTISH SOLDIERS.

The annual meeting of blinded Scottish sailors and soldiers, who were trained and are being looked after by St. Dunstan's, took place last week in Edinburgh. Over a hundred of these men are settled in and around Edinburgh engaged in poultry farming, boot repairing, making of mats, baskets, and nets, or as joiners, masseurs, etc. St. Dunstan's provides them with the necessary raw materials for their occupations and assists them in the disposal of the finished articles. Captain Ian Fraser, C.B.E., the blinded officer chairman of St. Dunstan's, in the course of an address to the men, said that the decline since 1919 of the income of St. Dunstan's in common with that of other philanthropic institutions connected with the war was causing considerable anxiety. Nevertheless St. Dunstan's was still going strong, and although it had been severely handicapped in the raising of funds by the loss of Sir Arthur Pearson, he counted on the generosity of the people of the empire to enable them to keep their pledge to the blinded men.

EDINBURGH EYE, EAR AND THROAT INFIRMARY.

This institution, with which the Eye Dispensary has been incorporated during the past year, treated 3,395 eye patients and 1,351 ear, nose and throat patients in 1922—a substantial increase over the figures for 1921. The financial statement showed a balance of £27 on the year's working; the amalgamation of the two institutions has been justified both in the interests of economy and of efficiency.

Ireland.

REFORM OF POOR LAW SERVICES.

THE Local Government (Temporary Provisions), 1923, Bill was debated in the second reading stage at recent meetings of the Senate of the Free State. One speaker pointed out, with regard to the hospital arrangements provided under the schemes for the amalgamation of workhouses, that in some of the Limerick districts patients had to travel twenty-seven miles to the County Hospital, and, to make matters worse, had, in some instances, to wait two days before an ambulance was available to remove them to hospital.

Mr. E. Blythe (Minister for Local Government) said that the bill, although it did not bear it on its face, was an act of indemnity during the period of the struggle which went on in the country when great changes were effected in Poor Law administration without any definite legal sanction, and the bill was necessary for the purpose of regularizing what had been done and to prevent endless confusion and litigation. If it were not for that, it might be possible to carry on as at present, until permanent legislation for dealing with local government could be introduced. The preparation of permanent legislation had been begun, and he hoped within three or four months it would be possible to bring it before the Dail. He would not claim that all the schemes were perfect, but they had been steps in the right direction, and the economies effected had been very considerable. There had been counties in which the economies amounted to £40,000 a year. The restrictions mentioned in regard to the granting of outdoor relief had been removed of necessity after the closing of the workhouses, and no destitute person could be allowed to starve. It was desirable to rid county homes of the horrible character attached to the workhouse, and to make them places where honest people could go in their last days. They desired to set up in each county a good county hospital very much above the standard of the general run of the workhouse hospitals. A certain number of cottage hospitals would be provided throughout the counties, but it had not been thought well to begin with many cottage hospitals because from many districts would come a spurious demand for the opening of such institutions, and it would not be right to yield to such clamour.

FOOD INSPECTION.

At a combined general meeting of the Ulster Branch of the British Medical Association and the Ulster Medical Society, held on March 2nd in the Medical Institute, Belfast, Professor Johnstone, F.R.C.S., M.P., in the chair, the following resolution was passed and ordered to be sent to the Ministers of those departments of the Parliament of Northern Ireland which take cognizance of such matters:

> That any Public Health Authority should have the right to examine and inspect the source of supply of any article of food offered for sale or consumed within its area.

Correspondence.

REGISTRAR-GENERAL'S STATISTICAL REVIEW, 1921.

SIR,—The Registrar-General cannot be congratulated on the latest issue of his "Annual Report" under the guise of a "Statistical Review." The first criticism which has to be made is the change in size of the publication, which is now royal octavo instead of folio foolscap. There is, in consequence, in some of the tables, some crowding of small type which renders the reading of the figures an effort for those who are not blessed with normal vision, especially if artificial light be used.

In the next place the "Review" is to be completed in three parts, and as Part I is priced at 10s. it is reasonable to suppose that the cost of the three parts will be round about 30s. In 1913 the one-volume Report cost 5s. 9d. A letter from H.M. Treasury justifying the increased charges for official publications appeared in the January issue of the *Journal of the Royal Statistical Society*. The examples cited in support of the contention that the sale of those publications has not been affected by the increase in price are not very convincing, being limited to the Registrar-General's Weekly Summary—a publication which the public can scarcely be expected to buy, as it is regularly summarized in the press—and the Annual Statement of Trade. The public generally ought to be encouraged to purchase and study a publication such as the Annual Report of the Vital Statistics of the Country, but this is not likely to happen when prohibitive prices are charged. Such documents should not be sold on an ordinary commercial basis.

It is a serious defect that the "text" of the Review has not

been issued simultaneously with Part I—a fact which has not prevented a reference to the "text" being included in the head note to Table 14 (p. 62). Since the Report for 1919 there has been no "letter" from the Medical Superintendent of Statistics to the Registrar-General. As those "letters" dealt with statistics for the proper analysis of which medical knowledge is essential, it is desirable that the inclusion of such "letters" should be resumed. Such "letter" should certainly have been included in this part of the Review.

In his preface to the volume under consideration the Registrar-General observes, "an endeavour has been made to regroup the statistical matter according to the distinctive character of its interest. The tables have thus been divided into (1) medical statistics and (2) civil statistics." He goes on to say, "It seemed probable, particularly in view of the increased scale of prices for Government publications now prevailing, that sections of the public would find it of advantage to be able to obtain a part in which they are specially interested instead of being obliged to purchase the whole publication." It may, therefore, be concluded that the Registrar-General considers that statistics of natality are not medical or—to use a wider description—that they form no part of vital statistics. Medical statisticians are not likely to endorse such a conclusion. To them, especially if engaged in public health work, the study of "income" (natality) is of as much importance and interest as that of "expenditure" (morbidity and mortality), critical examination of the latter being of little profit without taking into account the former.

When the Local Government Board published the Return of Notifications the data for any year were issued within something like six months after the expiration of that year. Part I of the Review, published last month, contains the Notification Statistics for 1921, so that publication of those figures has been delayed some nine or ten months.

On comparing the tables now issued with those contained in the Report for 1920 some important omissions will be noted. It is perhaps desirable to defer comment on those omissions until the issue of Part II, as the missing tables may appear as "civil statistics," which they certainly are not.

The table of "Causes of Death at Different Age Periods, 1921" (Table 17, pp. 124–208) is most inconveniently arranged with the causes of death at the top and the ages at the side. Moreover, the numerical sequence imposed by adherence to the International Schedule of Causes of Death is frequently interrupted, and causes with very small numbers are relegated to footnotes. The use of the table promises to be laborious, and the risk of mistakes in taking out figures considerable. Comparison of the tables on pp. 124–208 of the Review with the corresponding tabulation on pp. 140–241 of the Report for 1920 is greatly in favour of the latter.

When the foolscap series of Reports was initiated in 1912 the advantages attaching to the substitution of sanitary (administrative) for registration areas was emphasized. (See p. viii of the Report for 1911.) For the years 1911–20 short tabulations of deaths by cause, sex, and age were given for every sanitary area in England and Wales. The Registrar-General has now excluded from the tabulation to be found on pp. 365–414 of the Review all urban and rural districts having populations of less than 10,000.

To determine the effect of the change the figures for Oxfordshire have been examined. Table 14 (p. 86) shows that that county includes eight urban and eleven rural sanitary districts, of which one urban and six rural districts appear in the table on p. 393. Of the 453 deaths occurring in the aggregated urban districts, 278 (61.3 per cent.) are excluded from Table 21, and of 1,124 deaths in rural districts, 413 (36.7 per cent.). Those who have tabulated the deaths for the smaller areas will be unable to continue the work and have to be content with a group "Rest of . . . Districts" to be obtained by subtracting the figures given in Table 21 from the totals for "Aggregate . . . Districts" to be found in Table 20 (p. 332). While the data for the smaller districts for individual years may be of slight significance, the study of those data over a series of years cannot fail to be instructive. If considerations of space have been the reason for the exclusion, it may be pointed out that there are possibilities of saving much space by eliminating the repetition which has been allowed in Tables 26 and 27 (Notification Statistics), where data for every sanitary area are to be found. Such saving of space can be effected, it is believed, without sacrificing a single district.

It is to be regretted that no tabulation of institutional deaths has been given. With the existing changed housing conditions the practice of removing the sick to nursing homes or institutions has enormously increased. It appears to be very desirable that data for the examination of the extension of the practice year by year should be available not only as regards deaths, but also as to births, and, if possible, notified diseases.—I am, etc.,

London, W., March 10th. REGINALD DUDFIELD.

DERMATITIS FROM DYED FUR.

SIR,—As a certain amount of public interest has been manifested lately in the subject of dermatitis due to dyed furs it may be appropriate to give a preliminary account of some observations I have been making on this matter in the skin department of St. Bartholomew's Hospital during the last three months.

In the first place it should be pointed out that many thousands of women are wearing "beaver coney" collars without any ill result, and that even the large number of patients with dermatitis due to this fur which have lately been seen in every dermatological clinic must form but a very small percentage of the total wearers. In the second place it may be emphasized that this is no new phenomenon, although it is more widespread just now than usual. Cases, for example, have been reported in 1913 by Blaschko (*Deut. med. Woch.*, 1913, No. 49), in 1916 in America by Olson (*Journ. Amer. Med. Assoc.*, March 18th, 1916), and in 1922 by Rasch (*Ugeskrift for Laeger*, April 13th, 1922).

Since January 1st, 1922, we have seen in the skin department at St. Bartholomew's Hospital thirty-three cases of women and girls suffering from dermatitis due to wearing "beaver coney" collars. This fur is rabbit, dyed brown. The patients' ages have ranged from 15 to 50 years.

The eruption is so characteristic that in several cases I have been able to tell a patient before she has said a word that she has been wearing a beaver coney collar. This eruption was well described by Dr. Semon in his memorandum on the subject in the BRITISH MEDICAL JOURNAL of March 17th. It consists in the early stages of a blotchy erythema, going on in some cases to superficial vesication with weeping and crusting. The eruption affects the back and sides of the neck in nearly all cases, the chin and the lower part of the face in the majority, but in my experience in only about one-third of the cases does it affect the upper part of the face and cause oedema of the eyelids. The long axis of the patches on the sides of the neck is, as a rule, roughly horizontal or parallel with the lower border of the jaw. There is much itching and burning.

An interesting point is the length of time for which the different patients have worn their furs before the appearance of the rash. This has varied in my cases from two to twenty weeks, the average for ten patients who wore their fur collars at week ends only being eight and a half weeks, while for six patients who wore the collars every day it was just under six weeks.

Two explanations have been advanced to account for this latent period. Olson (loc. cit.) considered that it was only when the fur got damp from rain or perspiration that the dye was absorbed by the skin and the patient developed the rash for the first time. A more likely explanation seems to me to be that the delay is due to the patient gradually developing a sensitiveness to the irritant in question. In this connexion the experiments of Cash (BRITISH MEDICAL JOURNAL, October 7th, 1911) on the irritant properties of East Indian satinwood are of interest. Cash's experiments on himself and others showed that some people gradually develop an extreme sensitiveness to the irritant principles of this wood as a result of repeated local applications, and that this sensitization involves the skin of the whole body and not only the area treated.

In this connexion again the experience of one of my patients is of interest. She had taken eleven weeks to develop the rash on her neck, but after, at my advice, removing the fur collar from her coat, she carried it over her arm for a few minutes, and within twenty-four hours developed on her wrist, where the fur had rested, the typical erythema. On the other hand, I have seen at least two patients with collars and cuffs apparently of the same fur who had the rash on their necks but not on their wrists.

The rash in the majority of cases begins to get better as soon as the fur is left off and suitable local treatment commenced, but in some patients who have had the eruption a long time the whole skin has seemed to develop a general hypersensitiveness, and such patients may take a long time to get well.

Many materials used in dyeing furs are amino-derivatives

of benzene, naphthalene, etc.; others are benzene derivatives containing amino- and oxy-groups. In most or all previously reported cases the dye incriminated has been paraphenylenediamine, often known in the trade as "ursol," which is also the active principle of a popular hair dye well known to produce severe dermatitis in sensitive persons. In the oxidation of paraphenylenediamine an exceedingly irritating substance, chinondichlordiimine, is formed, and it is possible that in the cases under consideration this substance has been left in the furs owing to insufficient oxidation and to incomplete removal of surplus dye in the finishing process.

Through the kindness of Dr. T. M. Legge of the Home Office I got into communication with two prominent firms in the London fur trade. They both tell me that they have never had any complaints about furs dyed by themselves, and also informed me that much cheap beaver coney comes from the Continent, especially from France and Belgium, and also from the U.S.A. I showed to these experts independently six specimens of furs worn by my patients. One said that all the six came from France and probably from the same dyer, or at all events were dyed with the same dye. The other would not commit himself further than that they had all been dyed on the Continent. The latter gentleman now has the six samples of fur in question for investigation, and he and I with Dr. Mackenzie Wallis hope to publish an account of our findings at some future date.

In the meantime I may add that the London Fur Trade Association and the Ministry of Health have had the matter under investigation for some weeks. I am much indebted to Dr. Adamson for giving me charge of these cases, and to Dr. T. M. Legge of the Home Office and Dr. Allan C. Parsons of the Ministry of Health for their assistance and information.—I am, etc.,

A. C. ROXBURGH, M.D.Cantab., M.R.C.P.Lond.,
Chief Assistant, Skin Department,
March 17th. St. Bartholomew's Hospital.

SIR,—I have read with interest Dr. Semon's note on the subject of dermatitis from dyed fur, as undoubtedly this trouble is very frequently met with in the out-patient departments at present. The diagnosis usually presents very little difficulty, as the erythema tends to appear in rectangular patches on either side of the neck, and on both wrists if fur cuffs are worn. The cause is undoubtedly the wearing of cheap furs—that is to say, rabbit skins which have been dyed in imitation of the more expensive skins. The furs seem to be innocuous unless the wearer has a greasy skin, when the colouring agent appears to dissolve in the fatty acids. The type of fur which seems to be chiefly to blame is that which is known in the trade as "beaver dyed coney." The chief dyes used are as follows:

Light brown	...	Pyrogallic acid.
Medium brown	...	Metatoluylene diamine base.
Dark brown	...	Metaphenylene diamine base.
Red-brown	...	Para-amido-phenol-chlorhydrate.
Deep black	...	Paraphenylenediamine.
Blue-black	...	Nigrosine and nigrosine with paraphenylenediamine.

The cheap furs are apparently not finished—that is to say, the mordants used are not neutralized.

From the following description of the preliminary treatment of the furs it will be seen that some very powerful chemicals are employed, and it appears to be doubtful whether it is an unneutralized mordant or the dye itself which causes the dermatitis.

Dyeing Methods.

Before dyeing the hairs must be degreased. This process is carried out according to the hardness of the hair, with a solution of 1 to 2 per cent. of soda, or with soap lye containing 1 to 2 grams of ammonia per litre, or most thoroughly by the application of milk of lime (about 20 grams quicklime per litre) or by immersion in lime water. This process may be omitted, however, in the case of very soft, clean skins, or skins bleached with hydrogen peroxide.

Artificial dyes, or chiefly intermediate products (amines), are used in dyeing, either alone or together with natural dyestuffs.

In order to increase the affinity of the hair, it may be subjected to a preliminary treatment with bleaching powder, about 5 grams per litre for light and 10 to 15 grams per litre for dark shades. In the clear solution the skins are soaked for two or three hours, soured with hydrochloric acid (20 to 30 c.cm. per litre of water), and well rinsed. Particular care must be taken to see that the chlorine is completely removed, and if there is any doubt the rinsing should be followed by a treatment with a lukewarm solution of bisulphite (about 50 c.cm. per litre).

As mentioned, fur dyeing is done chiefly with amines, such as paraphenylenediamine and para-amido-phenol, aniline, etc. The organic amines, which are marketed as "ursols," "furols," "fantols," etc., are usually dyed on unmordanted skins for light shades and on mordanted skins for medium and dark shades. The most usual mordants are potassium bichromate and the sulphates of iron and copper, which are used in baths of weak acids, such as tartaric or acetic. With bichromate alone, red or brown shades are obtained; copper sulphate (or mixtures of that salt with bichromate) gives greener shades, which are still greener with ferrous sulphate. For black, mixtures of iron and copper salts are used. For dyeing with aniline black, the bath is prepared according to one or two methods. Sometimes it consists of a solution containing hydrochloride, or instead, aniline nitrate, sodium chlorate, ammonium chloride, copper sulphate, ammonium vanadate, and sodium bichromate, and sometimes aniline oil, nitric acid, sodium chlorate, copper sulphate, and ammonium vanadate, according to the method employed.

When using the amines on unmordanted furs, a larger quantity of the base is required, so that the solution must be much stronger. When the colour base has been dissolved in warm water, and diluted to the proper strength with cold water, after about an hour 12 volumes of hydrogen peroxide are added in quantities of 10 to 15 c.cm. per gram of the colour base for mordanted and of 30 to 35 c.cm. for unmordanted goods.—I am, etc.,

London, W., March 17th. WALTER F. CASTLE, M.B.Cantab.

IONIC MEDICATION.

SIR,—Dr. David Campbell's article expressing the views of a pharmacologist on ionic medication will be welcomed by all electrotherapeutists, especially by those who for the past four years have been exposing the fallacy of the theory of ionic medication on identical grounds and by similar experiments to those upon which Dr. Campbell bases his reasoning.

It must not be assumed, however, as Dr. Campbell almost seems to imply, that because the theory of ionic medication is erroneous, therefore the actual benefits from prolonged, intensive, and repeated applications of the constant current are thereby in any degree lessened. The value of such treatment, when properly administered, is now far too well established to admit of any doubts as to its great curative power. When failure results, such failure will be found to be due to the method of application, or to its adoption in unsuitable cases. When we consider that the constant current, the so-called "ionic medication" or "ionization," is commonly ordered by medical men who have no knowledge of electricity or its mode of action, and that the treatment is generally carried out by those who have no knowledge of medicine or of the nature of the diseases they are treating, it is remarkable that benefit is so often obtained.

The necessity for the administration of electrical treatment either by or under the direct supervision of a qualified medical man possessing some knowledge of the therapeutic action of electricity is well shown in the treatment of such conditions as primary sciatica and brachial neuritis, conditions which yield far more readily to electrical treatment than to any other remedy. Where such treatment is applied without suitable supervision by attendants with no medical knowledge the common radicular origin of this trouble is frequently overlooked, and the pads are placed on opposite sides of the limb at the points to which most of the pain is referred, with the result that the seat of the lesion is untreated, and, at the best, mere temporary relief of the pain, due to counter-irritation, can be hoped for. Or, again, cases of secondary sciatica, due it may be to sacro-iliac strain, sacralization of the lumbar vertebrae, to an untreated infective focus, or to pressure from a new growth, are submitted to a prolonged course of electrical treatment with no prospect of lasting improvement.

Dr. Campbell in his interesting paper appears to me to underestimate the beneficial effects obtained from the heat generated during prolonged, intensive, and repeated treatments by the constant current. The main arguments in favour of the heat so generated being the most important factor may be briefly summarized as follows:

1. The improvement obtained by this form of treatment is such as might be expected to result from a prolonged supply of heat energy to the part treated—namely, relaxation of spasm and consequently temporary relief of pain, an increased blood supply with consequent improved nutrition of the part, increased resisting power, and, if the treatment is continued for some weeks, some absorption of fibrous tissue and increased mobility of the joints in rheumatic and other cases.

2. According to Joule's law, it is calculated that as much as 2,000 calories can be generated by the treatment of a sciatic limb by the intensive constant current during forty minutes' treatment.

3. The skin temperature, recorded by a surface thermometer, of a sciatic limb 2° F. below that of the normal limb before treatment can be raised by the constant current to 2° F. above that of the normal limb at the end of the treatment. The thermometer employed in the series of treatments upon which this statement is based was placed on the skin far removed from the pads conveying the current, and hence the rise of temperature could not have been directly affected by dilatation of the skin vessels arising from either the polar action or the electrolytic action of the salts with which the pads were moistened. Neither could the rise of temperature recorded have resulted from the direct heating of the skin at the point tested, for according to the law of branched circuits a very small amount of current would be carried by the high resisting skin at this point.

4. Therapeutic results, practically identical, are obtained from the diathermic (which admittedly produces its results by its heating action) and the constant current, provided that approximately a similar strength of current is employed in each case.

If not convincing, these facts are certainly very suggestive. —I am, etc.,

Oxford, March 14th. W. J. TURRELL.

LUNACY LAW AND THE TREATMENT OF THE INSANE.

SIR,—From the interesting article with this heading in your issue of March 10th I gather that there are those who promulgate the view that it and when more enlightened notions prevail among the community it will not matter where a "mental" case is treated, or what the institution is called, "so long as the most effective treatment is secured." This expression of opinion, taken with the concluding lines of the article, entitles us to assume that it is considered by some that provision for treatment of incipient insanity can be made as well in connexion with mental hospitals as elsewhere. As long as "the most effective treatment" is secured it will make, that is to say, no difference to me, being in the state of incipient insanity, whether I am sent to the erstwhile Munich Psychiatric Clinic (now Deutsche Forschungsanstalt für Psychiatrie in München), or to some "Irrenanstalt" in Bavaria; to the Maudsley Hospital, or to a county asylum in Surrey or Kent.

Now, I have, in a memorandum drawn up for the guidance of my family for use in the event of my being seized with incipient insanity, expressly warned my relations against the sophistry and the fallacy which are wrapped up in the above teaching. In any given district the "most effective treatment" is to be secured from that galaxy ("assemblage of splendid persons") which is constituted by the staff of the general hospital; if, haply, the latter is in connexion with a medical school, the constellation is still more splendid. The hospital connotes the medical complex. What do these high priests of medicine, with their attendant acolytes ("teams") and abetting alchemists, know or care about the "asylum," its "inmates," and the Peculiar People who minister to these? As well discourse to them of Ur of the Chaldees; of ushabtis, ju-jus, and gargoyles; of far-away sorcerers. Yet we require the whole of this galaxy—and no mere counterfeit of it—to get busy amongst the incipient mental cases, and to regard them as their cases. The "most effective treatment" is not to be "secured" by occasional visits of members of the hospital staff to mental hospitals. The leper must go to the sanctuary, and abide therein. The place where the early mental patient is to be treated must, I believe, be entirely divorced from the mental hospital, and be part of the general hospital system; supported and administered, very probably, by the local authority, but, nevertheless, definitely in the hospital orb. The staff of this place will, in return, give, for what it is worth, such special experience as they may possess; unfold such beliefs as they, by uncertain tenure, may hold.

Such a place would have a status in the eyes of the hospital staff; at such a place, but not in connexion with a mental hospital, will the "most effective treatment" be "secured."

Therefore, in the event of the contingency arising, my said memorandum requests that I be taken to this place (if such can be found); not to the mental hospital, nor even to its purlieus; for hope doth not flourish in the miasm of chronicity, nor recovery take its beginnings from soil encumbered with end-products. And my memorandum further declares that my mind is not set against the Psychiater, should the high priests of medicine desire to take counsel with him. —I am, etc.,

Cardiff City Mental Hospital, March 13th. EDWIN GOODALL.

TREATMENT OF EARLY MENTAL CASES.

SIR,—In your issue of February 24th I notice that in the course of an article on early mental treatment you mention that the head of Staffordshire County Mental Hospital calls attention to statistics which are stated by him to prove how very small is the number of slight mental cases who presented themselves for medical treatment while still in the "uncertifiable" stage. A great deal depends naturally upon the doctor's estimate of the degree of loss of balance which constitutes certifiability. A mental specialist, when called in, is inclined (possibly from his familiarity with certain modes of interrogation) to certify many a case about whose committal the family doctor, who knows the patient well, would hesitate. In fact, his hesitation is the usual cause of delay.

We must bear in mind the patient's extreme dread of an asylum and the disinclination on the part of the relatives to use force to effect a transfer to such an atmosphere. Since force or subterfuge is pretty sure to be resorted to in the end, the evil day is naturally postponed as long as possible, the patient being meanwhile subjected to accumulated discomfort, distrust, and acute apprehension—conditions which do not tend to reassurance and recovery.

It is impossible to arrive at a true estimate of the number of slight mental cases amenable to early treatment until some reasonable provision is made for such an environment as will not tend to accentuate the dread and depression of the troubled soul. This can only be done by providing homes or hostels run on a hospital footing—that is, free from detention and unconnected with lunacy—for the benefit of those not bad enough to be certified. This common-sense expedient for dealing with the beginnings of insanity by the supply of attractive sanatoriums would soon revolutionize all our theory and practice in regard to those transitorily unbalanced. The Board of Control possesses no jurisdiction over the uncertifiable, and no legislation is needed to permit people to enter hostels where they run no risk of being detained. There is a strong body in Parliament, drawn from all parties, who have on several occasions presented a memorial to Health Ministers drawing attention to this most practical method for the cure of uncertifiable cases. Such homes could be started without any delay under the health committees of borough councils already empowered by the Public Health Act to run hospitals for any class of illness.

Instead of allowing common sense to be his guide each successive Health Minister is led by the lunacy authorities to frame a bill which, under the specious title of "Reform in Lunacy," is intended to diminish or annul the safeguards provided by the Lunacy Act, and to set up institutions under the Board of Control which shall serve as feeders to asylums. No wonder that early cases are averse to entering them. The Maudsley itself labours under the disadvantage of being numbered among the L.C.C. asylums, and consequently subject to lunacy administration and control.

Ministers will discover sooner or later that it is desirable to lend an ear to what public opinion has to say upon the urgent necessity of providing suitable sanatoriums for early cases as an alternative to asylums. Detention without certification—that is, without proper judicial inquiry—is both illegal and unjust. All patients who are dangerous and unfit to be at large ought to be certified, and no others. In a very large number of cases at present relegated to asylums there is no disease at all, only an exacerbation of the results wrought upon us all by the vicissitudes, the strains and shocks and stresses which we meet with in our journeying through life. The temporary loss of balance has been, in such cases, the result of adequate natural causes, and natural means must be resorted to for recovery. To place these patients under distressing conditions is the surest way to bring about the evil which we are endeavouring to avoid. They need fresh air and sunshine, occupation, interest, and cheerful surroundings.—I am, etc.,

London, E., March 12th. S. E. WHITE, M.B., B.Sc.

P.S.—Lord Cave has just informed us that a "bill is about to be introduced to supply machinery for dealing with mental cases of doubtful character, before passing them on to the machinery allowed by the present law." Since no bill is needed to permit anyone to enter a hospital, and since Lord Cave specifies that he refers to voluntary patients, the mention of some device for allowing them to be so dealt with, accompanied by another device to enable the patient, "if

mentally able to do so, to withdraw consent, and resume full liberty," indicates in a suspicious manner that there is more herein hidden than meets the eye.—S. E. W.

HOSPITAL POLICY.

SIR,—Mr. Bishop Harman's vision of those who differ from him as myopic "sleek men who sleep o' nights" in "pleasant places" is amusing and no doubt good propaganda, but it does not help much. It may indeed be that his Committee has got the Council floundering about in unpleasant places, from which it is difficult to see the wood on account of the trees.

The Council has acted in the matter in an unscientific way. We have asked for facts and been given opinions. My own opinion is that no hospital staff has asked for a "medical staff fund," nor is the failure of the voluntary system apparent. Probably the vast majority of hospitals are in the position of my own hospital—namely, it is ruled by a voluntary board, served by a voluntary medical staff, supported by voluntary contributions, and has no contract with anyone to take in any patient unless the medical staff recommends admission. The hospitals which I know have no intention of departing from this position at the present time, because it is a clear understandable position which has much to be said for it.

If the Hospitals Committee is so anxious to adopt a progressive policy it should be in the direction, first, of getting as many medical men as possible interested in hospital work. Instead of this, the new proposal tends directly to create a material vested interest. A medical staff will become a close corporation which will have a direct interest in not welcoming an increase to its members, and it beats me altogether to see the British Medical Association, which represents all medical men, lending itself to such a policy.

If the whole of this cumbersome policy has been built up in order to help young men who wish to be consultants, and who now do a great deal of work for very little return, then surely that is a matter which concerns the teaching hospitals more especially, and should be dealt with in another way; but meanwhile we want more definite knowledge of facts, and until that is given us we should drop the whole matter.
—I am, etc.,

Letchworth, March 14th. NORMAN MACFADYEN.

SIR,—In most of the letters and discussions about the hospital policy of the Association it is sought, by the analysis and division of hospital patients into various classes, to find some arrangement by which the British Medical Association can unite the conflicting opinions into one harmonious policy. Transferring for a moment our attention from the patients to the doctors, it appears that they are divided into classes even more difficult to combine under one policy than the patients. Among the doctors forming the hospital staffs throughout the kingdom there will be found:

1. Some who, whatever the policy of the Association, will refuse to take any payment for their services to any hospital patient.
2. Some who will accept, and probably demand, payment from one or more classes of hospital patient—for example, State-aided patients or members of a contributory scheme.
3. Some who think that the staff should have a share of every payment made by any patient to the hospital.

Although it is probable that these three classes include the great majority of medical men, yet no one can say with any certainty how the numbers are distributed, and there is a great danger that at the next Annual Representative Meeting, by the persuasive eloquence of a few members who really have clear-cut opinions on this subject and the debating power to press them, the majority, whose opinions, so far from being clear-cut, are distinctly nebulous, may be induced to pass a resolution which at the best will be tacitly ignored by many hospital staffs, and at the worst might lead to a split in the Association.

The payment of hospital staffs is a complete departure from long-established custom; after two years of discussion we have not yet got a policy which meets with anything like general approval even among ourselves. Beyond this we have to condider, if and when we apply for a staff fund, what the probable attitude of the lay committees will be. Further than this, if we can convert the lay committees (which I very much doubt) we still have to consider the effect on the general public.

We also have to remember that this is a question which, although it affects the profession as a whole, yet is primarily the concern of the staffs of the hospitals; it would seem an essential preliminary to any decision by the British Medical Association that there should be elicited from all over the country the opinion of these staffs. I would strongly urge that, either through the Divisions or by a direct inquiry from headquarters, the staff of every hospital in the kingdom should be invited to reply to the six questions set out in Dr. Fothergill's letter (BRITISH MEDICAL JOURNAL, December 30th, 1922, p. 1282, see also below). These questions put the matter in a much simpler form than any resolution I have yet seen. If we could have the answers to these questions we should at least know the opinions of the men most intimately concerned, and might be saved from the mistake of putting on record a policy which the staffs might reject. A further source of information which would be helpful is the number of hospitals which have already established staff funds. A resolution was passed at the last Annual Representative Meeting that this information should be obtained and given to the Divisions for their guidance. Has the Council yet got this information?

Possibly all this has been said before, but in a question of such cardinal importance it would be a disaster if the Association committed itself without being very sure of its ground. Unless there is clear evidence that the great majority of the profession are agreed, it would be far better to postpone any decision until such agreement is achieved.

The six questions of Dr. Fothergill's letter referred to above are:

Do you consider that contributions to a staff fund should be made from—
1. Gratuitous contributions, existing hospital assets, endowment funds, and the like.
2. Payments made to the hospital by private patients, provided that the staff is allowed to charge fees.
3. Small payments made by individual patients, which are not recoverable by the patient from a third party, and which are not more than the cost of accommodation and maintenance.
4. Similar payments (as 3 above) which are more than the cost of maintenance and accommodation.
5. Payments made to the hospital by the State, municipal authorities, employers of labour, approved societies, insurance companies, or any other body which has entered into a financial arrangement with the hospital.
6. A contributory scheme under which there is a stated or implied return required from the hospital on behalf of the members of the scheme.
—I am, etc.,

Brighton, March 18th. A. C. GEMMELL.

SIR,—The Chairman of the Hospitals Committee plumes himself mightily on the alleged success of his policy. I predict that his complacency will receive a rude shock at Portsmouth. He quotes a sentence from Lord Onslow's report in support of his novel definition of a voluntary hospital. Surely it would have been franker to quote the actual definition of this Committee, which is as follows:

"An institution (other than an out-patient dispensary) managed by a responsible committee and wholly or mainly supported from voluntary sources," etc.

Now Mr. Harman has plainly confessed that if his scheme proceeds, which it certainly will not, lay boards must be paid.[1] Whether "voluntary management" in the eyes of Lord Onslow's Committee embraces this contingency I know not, but I am aware that a single chairman of a large hospital values his unrequited services to his institution at £1,000 a year. Will Mr. Harman at long last now state, without further wriggling or evasion, who will provide all this money under any system where hospitals are "wholly or mainly supported from voluntary sources," and what shred of "voluntary control" will survive in these institutions under his scheme? I would yet again inquire how many staffs have so far approached their lay boards with his policy, and with what success, and when he proposes to approach his own? Why, if "close co-operation between lay boards and staffs" is essential, this policy was sprung upon us at such short notice that it was physically impossible for any consultation to take place between them before decision was actually taken, and advertised for a great deal more than it was worth? Why a matter of such importance was so artfully buried in nine lines of the fifty-four pages of the report of the Council, and why its rejection by Scottish staffs was deliberately suppressed in that report and ignored at Newcastle? As for the rest of his long letter, there is not a word in it that in any way reflects upon the policy which

[1] BRITISH MEDICAL JOURNAL, April 8th, 1922, p. 582.

I advocate, and which is set forth in a resolution recently passed by the Brighton Division to be circulated to all the others. That your readers may, however, attach due weight to the arguments of an authority so eminent I reproduce for their benefit his former words:

"He thought he spoke for most of those present when he said that they believed in the voluntary system so completely that they would like, if they could, to have the old voluntary hospital, of the old days . . . they wanted the nearest approximation to it that could be secured . . . this fine spirit of independence was of the greatest advantage to their professional life."[2]

After this panegyric it is somewhat disconcerting to those unfamiliar with the versatility of his genius to find him, that same afternoon, promoting vigorously a policy concerning the financing of which under any sort of voluntary system he deigns not the smallest intimation, and which has been condemned, by no less authority than the Cave Committee, as a direct menace to the whole voluntary principle.

Presently we find him, at Newcastle, scoffing at the efforts of the Brighton Division to salve some remnant of that honourable tradition so lately the object of his affectionate regard, and thereafter, in the *Times*,[3] parading his opinion of the "greater fairness" of the Continental system, while advertising to all the world that the hospital policy of the Association should assist a consultant in Harley Street to be "enshrined in suitable and substantial elegance," and to be conveyed in a "handsome chariot" upon his rounds. The engaging candour of this confession acquires much added charm when we recall the long list of purely altruistic purposes circulated to us, towards which it was suggested the staff fund might with advantage be dedicated by less exalted honorary officers. I must not dwell on the urbanity[4] of his first remarks about myself when I had the hardihood to differ from him, and to express what proved to be the opinion of the majority of the profession and practically all lay boards, but would pass on to that dramatic moment, when, finding any reasoned reply inconvenient,[5] he waved me aside with fine disdain and threw himself upon the good offices of those "reasonable men," the lay committee of the West London Hospital, whom to this day he dare not thus approach, well knowing he would not be supported even by his own colleagues if he did. I would not, however, withhold due meed of praise to the originality he exhibited when, having scanned the whole horizon and dredged the very depths of his intellect for an outstanding example of the voluntary spirit free, unfettered, and uncontrolled, he selected[6] with amazing diagnostic precision—the British soldier under strict military discipline in time of war! Mr. Harman would explain the patent defeat of his policy at Glasgow by the alleged intervention of "comfortable places." Seeing that 150 amendments had appeared on the agenda sheet in 1922 where there were none in 1921, it is surely transparently clear that the sole reason for its temporary former success was that, owing entirely to the methods employed in its introduction, scarcely anyone had taken it seriously, or indeed considered it at all. Will he now explain exactly in what way Belfast, Bristol, Cardiff, Liverpool, Southwark, and Smithfield are more "comfortable" than Leicester?—I am, etc.,

Chichester, March 10th. G. C. GARRATT.

Sir,—In communications appearing in your JOURNAL on pages 353 and 398 I suggested that the greatest confusion was rapidly arising with regard to the relative positions of hospitals, contributory schemes, and the medical profession, and certain principles were submitted for general approval, the adoption of which it was hoped would clear the issue.

Dr. Garratt in your last issue quotes one of these principles[7] but disregards others on which it depends[8]; he says that he is amazed, asks where the money is to come from, and adds that if such a "notion" were "propagated" it would militate greatly against successful appeals for funds made by hospitals.

In order to determine the correctness of a principle it is not necessary to delay its adoption until some procedure has been elaborated under which that principle can be put into operation. The question is, Is the principle sound?

"*Where is the money to come from?*" The charitable public will find the funds required for the rapidly decreasing group, the indigent poor (15 per cent. of patients). The State, private patients, and all bodies contracting for additional medical services should be required to pay *in full*. Then there are left those suitable for insurance under a contributory scheme (2d., 3d., or up to 6d. per family per week) who should be able to pay for accommodation, maintenance, and medical services, whatever may be their individual financial position. These last two groups make up the 85 per cent. of patients. Until the general economic conditions are easier the charitable public probably will be willing to assist the last group and the doctors will do so by accepting only a percentage as recognition of the principle that this is a business undertaking and not a charity. (It is interesting to read that this last group, although paying nothing for accommodation nor for medical services, but only paying the maintenance, is loudly proclaiming that they pay for everything which they receive; that they have a right to it, and that there is no charity attached thereto. Some hospitals openly support this contention.) Does Dr. Garratt contend that this weekly payment is beyond the means of those who should be insured? If it is found to be so in some cases no doubt the charitable would assist to pay those premiums.

"*If such a notion were 'propagated' it would militate greatly against successful appeals for funds.*" Does Dr. Garratt contend that appeals are a necessary part of a voluntary hospital? Cannot we visualize and work toward the day when whist drives, banquets, dances, concerts, bazaars, students' buffoonery, and all similar appeals will have been replaced by contracts drawn up on business lines with the State, private bodies, and groups of individuals to pay not only in full for additional medical services, but also a small amount over; which margin, together with regular charitable subscriptions, will put at the disposal of boards of management ample funds with which to provide for the rapidly dwindling group of indigent poor the best of treatment; that day when, in fact, the recently imposed garb of self-advertisement and self-pleasing will have been removed finally from Charity? What a relief such a state of affairs would be to all!

In the meanwhile if hospital boards adopted the suggested principles and when appealing for funds stated specifically for which of the three groups the money is required, promising to use the money only for that group, the public would be in a better position to appreciate the situation. Whereas appeals now made are thought to be for the indigent poor the money received is really used to wipe out so far as it will go the debt caused through having entered into contracts to provide additional medical services at less than cost price for those well able to pay in full. The failure of an appeal which seemingly so distresses Dr. Garratt would really act as a wholesome tonic, because it would compel hospital boards to put their houses in order.—I am, etc.,

Hove, March 10th. E. ROWLAND FOTHERGILL.

TREATMENT OF OPHTHALMIA NEONATORUM IN LONDON.

SIR,—In the BRITISH MEDICAL JOURNAL of March 3rd, p. 390, I see some criticisms of the existing arrangement for the treatment of ophthalmia neonatorum at St. Margaret's Hospital, also contrasting it with Liverpool. I would like to point out that in Liverpool the ophthalmia neonatorum department is attached not to the general hospitals but to St. Paul's Eye Hospital.

One quite admits that a hospital devoted entirely to ophthalmia neonatorum is liable to be associated with venereal disease, although at St. Margaret's every precaution is taken against it and we have not had much trouble therefore, but I think this might still further be overcome by attaching an infants' welfare centre to it.

In your article you say that the Departmental Committee on Blindness think it would be advantageous that hospital accommodation should be provided by securing beds in teaching hospitals in centres convenient to the great masses of the population. It does not matter materially to the patients where the hospital is situated since the Metropolitan Asylums

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[2] BRITISH MEDICAL JOURNAL, SUPPLEMENT, January 1st, 1921, p. 1.
[3] April 30th, 1922.
[4] BRITISH MEDICAL JOURNAL, December 24th, 1921, p. 1095.
[5] BRITISH MEDICAL JOURNAL, April 22nd, 1922, p. 662.
[6] BRITISH MEDICAL JOURNAL, April 8th, 1922, loc. cit.
[7] The tariff of payments fixed for this 85 per cent. should be such as to pay in full the whole cost to the hospital, including remuneration of the staff.
[8] Owing to the economic conditions at present existing the staff should be willing, temporarily, without prejudice and as a concession, to receive a nominal recognition of the services rendered, by means of a percentage payment. By this concession the Board of Management will be able to fix a lower tariff of fees than it otherwise could for the reception of this 85 per cent. Members of a contributory scheme, whatever their individual financial position may be, are no longer objects for hospital charity.

Board send ambulances to bring both the mother and baby to the hospital.

It is of the utmost importance for the sake of the children's health and also for the successful treatment of the disease in infants who are not accompanied by the mothers that they should be placed in open-air wards specially built for the purpose, which could not well be provided at any general hospital without building; also isolation wards have to be provided, both for the sake of the child and the mother.

With regard to the teaching of students, it seems to me that there ought to be no more difficulty in their attending St. Margaret's Hospital, which they do not do at present, than any of the fever hospitals as they do during the course of their training.—I am, etc.,

London, W., March 7th. M. S. MAYOU.

GENERAL OEDEMA OF THE FOETUS.

SIR,—May I be permitted to call attention to the report (BRITISH MEDICAL JOURNAL, March 17th, p. 470) of some remarks made by me at a meeting of the North of England Obstetrical and Gynaecological Society, and to point out that they give expression to an opinion with which I do not agree? The histological appearance of the liver in general oedema of the foetus is certainly suggestive of leukaemia, and some of the earlier writers believed the condition to be of this nature. More recent observers, however, have shown that the small round cells seen in great numbers in the liver and elsewhere are not white blood cells, but are nucleated erythrocytes. The condition is not, therefore, a leukaemia, though at first glance this mistake might easily be made.—I am, etc.,

Liverpool, March 18th. NORMAN B. CAPON.

THE RIGHTS OF A REGISTERED MEDICAL PRACTITIONER.

SIR,—The retired practitioner has been discriminated against before. In a lunacy certificate there is this clause: "I am a person registered under the Medical Act, 1858, and I am in the actual practice of the medical profession." I have always regarded this as an infringement of the privileges of the profession.—I am, etc.,

Rotherham, March 18th. GILBERT E. MOULD.

SIR,—Is the distinction between a practitioner in actual practice and one not in actual practice quite an innovation? It is found in the "Certificate of Medical Practitioner," Lunacy Act, 1890, Second Schedule, Form 8. I am not sure that anyone knows what it really means. It should certainly not be put into any more Acts or Regulations.—I am, etc.,

Birmingham, March 20th. WALTER R. JORDAN.

Universities and Colleges.

UNIVERSITY OF LONDON.

NOTICE is given that among members of the Senate vacating office next May is Dr. T. D. Lister, elected by the graduates of medicine. Nominations should be sent to the Clerk of Convocation, at the University, not later than April 4th. Dr. Lister is eligible for re-election.

NATIONAL UNIVERSITY OF IRELAND.

OWING to the death of the Registrar, Sir Joseph McGrath, LL.D., the meeting of the Senate on March 16th was adjourned to March 27th, and a resolution of regret and sympathy was passed unanimously and ordered to be transmitted to the family.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

Council Election.

THE following Fellows are candidates for election to the Council: Sir Herbert Furnivall Waterhouse (F. 1890); James Berry (F. 1885); John Herbert Fisher (F. 1893); Herbert John Paterson, C.B.E. (F. 1897); William Sampson Handley (F. 1897); Thomas Percy Legg, C.M.G. (F. 1897); Victor Bonney (F. 1899); Donald Armour, C.M.G. (F. 1900); Percy Sargent, C.M.G., D.S.O. (F. 1900); George Ernest Gask, C.M.G., D.S.O. (F. 1901); George Grey Turner (F. 1903).

The death of Sir William Thorburn increases the vacancies from four to five.

Voting papers will be issued on April 3rd.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

THE following have been appointed to professorships in the schools of surgery: Medicine, F. C. Purser, M.D., F.R.C.P.I.; Midwifery, E. Hastings Tweedy, F.R.C.P.I.; Preventive Medicine and Medical Jurisprudence, V. M. Synge, M.D., F.R.C.P.I.

Obituary.

SIR WILLIAM THORBURN, K.B.E., F.R.C.S.,

Consulting Surgeon, Manchester Royal Infirmary.

THE announcement of the death of Sir William Thorburn on Sunday last, March 18th, will cause great regret among a wide circle of friends and old pupils. He had removed from Manchester to London only a few months ago, shortly after the death of his wife, and then appeared to be in his usual health. Although he felt severely the loss of his two sons in the war, he returned from his service with the British Mediterranean Force in apparently good health and with renewed energy. He had been ill for about two months, and his death was not unexpected by those who were closely associated with him.

William Thorburn, who was born on April 7th, 1861, was the son of Dr. John Thorburn, professor of obstetric medicine at Owens College, where William Thorburn received his medical education. He was a brilliant student. He graduated in the University of London B.Sc. in 1880, M.B., B.S. in 1884, with gold medals in medicine and obstetrical medicine and surgery, and M.D. in 1885 and the F.R.C.S. in 1886. He became house-surgeon at the Manchester Royal Infirmary in 1883, and after filling other offices was elected honorary assistant surgeon in 1889, and succeeded the late Walter Whitehead as honorary surgeon in 1900. He retired in 1921, becoming honorary consulting surgeon before his full period of service had expired, so as to be free to attend to his other duties and to allow promotion of his junior colleagues. At an early stage of his career in Manchester he came under the influence of James Ross, then working out his neurological researches at the Manchester Royal Infirmary. Thorburn directed his mind to nerve surgery and was awarded in 1890 the Jacksonian prize of the Royal College of Surgeons for his essay on the Nature and Treatment of Injuries to the Spinal Column and the consequences arising therefrom. As Hunterian professor at the College he delivered a course of lectures on the surgery of the spinal cord, which was expanded into a book published in 1889. He wrote many other papers on spinal cord and brain surgery, and he also contributed to the knowledge of the pathological results cervical rib may produce.

In the Bradshaw lecture delivered last December on the surgery of the nervous system he reviewed his experience of many years. His tone of disappointment on his results was not surprising to those who heard his conclusions on the subject of the operative treatment of traumatic epilepsy delivered at the Manchester Medical Society several years ago. Nerve and brain surgery was by no means his only interest, and he had a large practice in general operative work in Manchester. His great knowledge, fine memory, wide experience, and his powers of lucid, concise expression and ordered arrangement of material made him a great teacher; and his ward classes and clinical lectures were eagerly attended by students. His lectures and addresses were all very carefully prepared beforehand and more or less memorized.

Thorburn had, indeed, a clear thinking type of brain. At one time he took a great interest in the war game, or Kriegspiel, which was played in Volunteer circles, and he became skilful at it. He also had a good whist and bridge mind. His knowledge was pigeon-holed and card-indexed. As a speaker he was precise and had his argument arranged in logical and connected order and with no padding. In this way he conveyed the impression that he was a thorough master of the subject he was speaking on, and suggested to some the thought that he would have risen to as high an eminence at the Bar as he did in surgery had he chosen the former profession, and that his judgements would have been models of lucidity and commendable brevity. He possessed a great faculty of summing up the points of a difficult subject, and could crystallize the ideas expressed in a debate in a few well chosen and clear words. He was one of the Pelhams of life, preferring to stop before his audience had had enough of his discourse rather than to outstay his welcome. He would have made an ideal representative of the medical profession in Parliament. He was eminently fitted to command the applause of listening senates.

For many years before the war Thorburn was a much trusted adviser in the Council, the Senate, and the Faculty of Medicine of the University of Manchester, and his opinion on educational matters was highly appreciated by

his colleagues there and by those on the honorary staff of the infirmary. He took a broad-minded, sagacious, and long view of problems, picking out essentials and leaving the smaller matters to take care of themselves. His business and administrative capacities and his knowledge of detail were of much service on the subcommittee of the Board of the Manchester Royal Infirmary in planning the building of the present large and fine hospital on the pavilion plan. In later years his many calls to London interfered with his regular attention to university matters, to the great regret, not only of his fellow-workers, but also of himself, for he was always proud of his school and anxious that its students should succeed in examinations and in after-life.

During his year of office as President of the Manchester Medical Society he used his administrative and persuasive mind in helping to work out a closer agreement than already existed between the University medical library and the library of the Manchester Medical Society. This arrangement enabled the Medical Society to offer to its members a wealth of medical books and periodicals approached by no other society in the kingdom with a subscription of one guinea. The gain to the research workers of the university was also immense.

Sir William Thorburn was a member of the British Medical Association, and vice-president of the Section of Surgery at the Annual Meeting in Manchester in 1902. At the Annual Meeting in Cambridge in 1920 he opened the discussion on the end-results of injuries to the peripheral nerves treated by operation.

In recent years he took great interest in the work of the Royal College of Surgeons, both from the administrative and examining points of view, and he spent a great deal of time in London. He was on the Council for many years, and an examiner for the final examinations of the Conjoint Board and for the Fellowship of the College. He was a good and fair examiner for the average man, but did not suffer fools gladly. In recent years he examined in surgery for Oxford University. His work on spinal and nervous surgery and his great experience made him much sought after by railway companies or litigants in compensation cases, and he made an ideal scientific witness.

When the war broke out he was on the staff of the Second Western General Hospital in charge of the surgical section. Before long he went abroad as consulting surgeon to the British armies in the Mediterranean and saw service in Malta, Gallipoli, and Salonica, and he served also in France. He was a great source of strength to the officers of the R.A.M.C. in the districts where he worked. He received the C.B. (1916) and the C.M.G. and the Military K.B.E. (1919) for these services, and the honorary degree of M.D. from the University of Malta. Going away to the war in rather poor health, he came back, as he said, a new man and threw himself with renewed vigour into his professional work, especially that connected with the Royal College of Surgeons. He led a very active and busy life, and though his later years were saddened by domestic griefs he must have felt that he had fought a good fight and accomplished much. He was president of the St. Andrews Society of Manchester at the time of his death, and was deputy lieutenant for the county of Lancaster. He married Miss Melland, who, as has been said, died last year. He is survived by three daughters.

We are indebted to Mr. JOHN HOWSON RAY, assistant surgeon to the Royal Infirmary, Manchester, for the following:

In the death of Sir William Thorburn Manchester loses one of its most distinguished surgeons, and a man who had played a most important part in the development of its medical school, to which he was so devoted. As one of the pioneers in neurological surgery he will perhaps be chiefly regarded in the future, and there is no doubt that his painstaking investigations into the distribution of the peripheral spinal nerves (to which effort he was inspired largely by the late Dr. James Ross) at an early stage in his career led him to follow with undiminished interest the surgery of the central nervous system; and his last public address, the Bradshaw lecture, was on the surgery of the spinal cord. In neurological surgery Thorburn was thoroughly at home, and he displayed decided operative dexterity and resource in his laminectomies, in which he had a large measure of success. It was an inspiring sight to be present at one of Thorburn's operations on the spinal cord, where he carried out the various stages with precision, sureness, and artistic finish. In the Manchester Royal Infirmary he held many appointments in his time, and from the period when he was in charge of out-patients to that in which he had control of wards his teaching was invariably of the best, and proved of the utmost value to many generations of students. As a lecturer he was unusually clear, concise, logical, and convincing. Of good address, dignified, and courtly to a degree, and with an excellent delivery, he could hold his audience with ease, and he never failed to be interesting whatever subject came under his review. He was animated by high ideals and did much to promote the cause of education in the Medical School of Manchester, taking his full share in drawing up the modifications in the curriculum necessitated by the development of medicine.

He was an excellent organizer, an ideal chairman of committee, and he rendered an enormous service in planning the details of the new Manchester Royal Infirmary in co-operation with the late Mr. Charles Hopkinson. As chief of a surgical unit he inspired house-surgeons, surgical dressers, and nursing staff to aim at the highest standard of efficiency and encouraged originality and research. Of a rather shy and reserved nature, he did not appear to make friends readily, but once his friendship was given it was lasting and loyal, and he was a highly valued colleague in the Royal Infirmary.

In the University he had been lecturer in operative surgery and in surgical pathology, and finally occupied the chair in clinical surgery, and in each position he was entirely successful. He had very wide interests, and his advice was sought in many fields in addition to that of surgery. For many years he had been a member of the Council of the Royal College of Surgeons of England, and an examiner in surgery at the College and in various universities. As an examiner he was fair-minded and reasonable, and displayed a quiet patience towards the candidate. At the outbreak of the war Thorburn was officer in charge of the Surgical Division at the 2nd Western General Hospital, but in 1915 he was appointed consulting surgeon to the Expeditionary Forces in the Mediterranean; at a later date he proceeded as a consulting surgeon to the Rouen area, and he has placed on record some of his experiences of overseas war work. On his retirement from the active staff of the Manchester Royal Infirmary in 1920 his colleagues on the Medical Board invited him to give annually a series of lectures on the surgery of the nervous system, thus marking their sense of his great service to the school, and their wish to retain the association with a colleague who had given so many years of a very active life to the work of the hospital.

JOHN IRVING, M.B., C.M.GLASG.,
Consulting Surgeon, Huddersfield Royal Infirmary.

WE regret to record the death, in the early morning of March 9th, after a week's illness, of Dr. John Irving of Huddersfield, who practised for nearly half a century in that town.

John Irving was born in 1850 at Sanquhar, Dumfriesshire, and studied medicine at the University of Glasgow. He graduated M.B., C.M. in 1873, and in the same year began his association with Huddersfield by becoming house-surgeon to the Royal Infirmary. In 1884 he was appointed honorary surgeon, and in 1905 consulting surgeon. His professional standing in the district is shown by the honours conferred upon him by his colleagues. He was twice president of the Huddersfield Medical Society and once president of the Leeds Medical Society. He had been chairman of the Huddersfield Division of the British Medical Association and a member of the local Insurance Committee from the time of its formation. Dr. Irving also took a large share in the public life of the district. He was made a justice of the peace for the borough in 1906, and carried out his duties as a magistrate to the admiration of all. On March 10th warm tributes to this work were paid by the chairman of the Bench and by the president of the Huddersfield Law Society on behalf of the solicitors practising at the borough police court. As surgeon to the local hospital, as magistrate, church officer, and member of the local St. Andrew's Society, Dr. Irving was a notable figure, respected and liked by all.

We are indebted to Sir JAMES BARR for the following appreciation:

By the death of Dr. John Irving I feel that there has been severed an unbroken friendship of half a century, which it is difficult to heal or replace, and this, I think, will be the feeling of all his old and young friends. Our friendship as students became more and more enhanced as we grew older in the battle of life. Irving, no doubt, grew in knowledge and

experience as time rolled on, but in wisdom he had very little to learn, as even when a student he was looked upon as a man of mature judgement who did not indulge in any of the frivolities of youth. Soon after graduation he gravitated to England as house-surgeon to the Huddersfield Infirmary, and from that town he rarely strayed except to indulge in his favourite pastime of curling. For many years there have been no opportunities for this game in England, hence he had to take those holidays in Edinburgh and Switzerland.

Dr. Irving became honorary surgeon to the Huddersfield Infirmary, where he rendered faithful and valuable services for many years, eventually becoming consulting surgeon. He was an enthusiastic admirer of the Leeds school of surgery, and had always unstinted praise for the brilliant achievements of Sir Berkeley Moynihan. He kept well abreast of modern developments in that ever-advancing branch of medicine. Although he laid no claims to brilliancy as an operator, and knew his own limitations better than anyone else, he was always considered a safe surgeon in whose hands a patient could repose with confidence; I know that his opinion was readily sought by his colleagues, and consultants were always ready to accept and act on his judgement. He did excellent work during the war, both to soldiers and civilians. His brethren who were at the front well knew that so far as Irving was concerned their interests were not neglected. He wisely eschewed medical politics as not suited to his placid temperament, but he took a warm interest in the work of the British Medical Association, and at one time was Vice-President of the Yorkshire Branch.

He was of the Puritan type, a man of great fervour and strong religious feelings, but he never tried to thrust his views down the throats of others. He was ever ready to try to raise the fallen and succour those in distress, a good Samaritan rather than a Pharisee: a Nathanael indeed in whom there was no guile. Although a strict teetotaler, no one could complain of his hospitality. I have sat by his side at a St. Andrew's dinner from 6.30 till nearly 2 o'clock the next morning, when John Barleycorn was, perhaps, more plentiful than the water, but he enjoyed the fun as well as the most hilarious of us. He always enjoyed a good Scottish joke, although he rarely perpetrated one.

For some years he had been liable to attacks of bronchitis in the winter, but with the last attack he was, I understand, only ailing ten days, and the end came rather suddenly and unexpectedly. He passed away peacefully in his sleep, dying as he lived, at peace with God and man. He has left a son and two daughters to mourn their loss. At the funeral there were a great number of his professional brethren, and it seemed as if the town of Huddersfield had turned out to do honour and reverence to the memory of a worthy citizen.

Dr. HERBERT NISBET ECCLES died on March 11th, aged 39. He was the son of Dr. G. H. Eccles of Plymouth, and received his medical education at Guy's Hospital. After taking the diploma of L.M.S.S.A. in 1916 he joined the R.A.M.C. on August 3rd of the same year as temporary lieutenant, and was promoted to captain after a year's service. He went to India, where he became *x*-ray specialist to the Bombay Brigade. He was invalided out of the service after three years, when he started practice at Plymouth, following his father and grandfather. His health, however, could not stand the strain, and he passed away at the house of his brother, Dr. G. T. Eccles of Hove. He was a member of the Plymouth Division of the British Medical Association.

Dr. ROBERT YOUNGER of Willington Quay, Newcastle-upon-Tyne, died after a short illness on March 11th. He was the youngest son of the late Mr. James Younger of Alloa and took the degrees of M.B., B.S.Durh. in 1902, and served as senior anaesthetist to the Royal Victoria Infirmary, Newcastle-upon-Tyne. He succeeded to the practice of his brother-in-law, the late Dr. Woodhouse, thirteen years ago. He was medical officer to the Post Office and surgeon to the Wallsend Slipway and Engineering Company. During the war Dr. Younger served with the R.A.M.C. and was wounded. He was a member of the Tyneside Division of the British Medical Association.

The death occurred on February 26th of Lieutenant E. W. MCQUAID, surgeon probationer in the Irish National Army, who was mortally wounded four days previously by Republican Irregulars at Newport, co. Mayo. He was shot while attending a wounded National soldier, and, although seriously wounded, gallantly carried his patient to a place of safety. Lieutenant McQuaid, who was 22 years of age, was the son of Dr. E. W. McQuaid, of Cootehill, co. Cavan. He was a medical student of the Royal College of Surgeons in Ireland, and had recently been appointed demonstrator of anatomy and pathology.

Medical News.

AT a final meeting of the Oxford Osler Memorial Fund last week the honorary secretary, Professor J. A. Gunn, reported that the amount so far received was nearly £2,000. It was decided to place a bronze plaque in the University Museum; to found a memorial medal, to be awarded every five years to a graduate of the University of Oxford who has made some distinguished contribution to medical science; and to form an Osler travelling fund to assist teachers of the medical faculty to travel in the interests of medical knowledge and research. For this purpose alone a capital sum of £1,700 is required, and further subscriptions, which should be sent to Mr. A. P. Dodds-Parker, 2, Holywell, Oxford, are invited.

PROFESSOR A. V. HILL, Sc.D., F.R.S., of Manchester, has been appointed Jodrell Professor of Physiology at University College, London, in succession to Dr. E. H. Starling, F.R.S., who has become Foulerton Professor of the Royal Society foundation.

THE house and library of the Royal Society of Medicine will be closed from Thursday, March 29th, to Tuesday, April 3rd, both days inclusive. The Wellcome Historical Medical Museum will be closed for cleaning and decoration from April 1st to 30th, inclusive.

A NEUROLOGICAL section is being established in the out-patient department of the Royal Northern Hospital, Holloway. It will be open every Friday at 1 p.m., on and after April 20th.

THE newly formed section of the Royal Microscopical Society which deals with industrial applications of the microscope will hold a meeting on Wednesday next, March 28th, at 7 p.m., when a number of instruments will be demonstrated and papers read.

THE annual meeting of the Society for the Study of Inebriety will be held in the rooms of the Medical Society of London, 11, Chandos Street, Cavendish Square, W., on Tuesday, April 10th, at 4 p.m. Dr. W. M. Feldman will open a discussion on racial aspects of alcoholism.

IN memory of the late Dr. W. H. Hender Bennett, for many years a member of the honorary medical staff of the Batley and District Hospital, it is proposed to endow a cot in the hospital and to erect a memorial stone over his grave.

M. SOVREL, senior surgeon of the Berck Maritime Hospital, will give a series of six lectures on the treatment of osteo-articular and glandular tuberculosis from March 26th to 31st. Each lecture will be followed by operations, fitting of plaster apparatus, etc. Further information can be obtained from M. Parin, Hôpital Maritime de Berck-Plage, Pas-de-Calais.

IN the Fifth International Congress of Historical Studies to be held at Brussels from April 8th to 13th, the history of medicine will be represented in the ninth section, which is devoted to the history of civilization. The subscription of 50 Belgian francs is payable to the treasurer, Professor C. Terlinder, 61, Avenue Legrand, Brussels. Further information can be obtained from the General Secretary, Ve Congrès des Sciences Historiques, Palais des Académies, Rue Ducale 1, Brussels.

THE Confédération des Travailleurs Intellectuels Français, which is merciful enough to use the contraction C.T.I., is summoning an international congress of Cs.T.I. to meet in Paris on April 5th. It will assemble under the presidency of M. Léon Bourgeois, senior French delegate to the Society of Nations. Other representatives of that Society, of the International Labour Office, and of several nations, will be present. It is hoped at this congress to form a Confédération Internationale des Travailleurs Intellectuels (C.I.T.I.). Further information may be obtained from the Secretary-General of the French C.T.I., 12, Rue Henner, Paris.

AN International Tuberculosis Congress will be held in Madrid next month under the patronage of King Alphonso.

DR. GIUSEPPE CARONIA has been nominated professor of clinical pediatrics in the University of Rome in succession to the late Professor Luigi Concetti.

AN appeal has been entered by the plaintiff against the judgement given against her by the Lord Chief Justice, on the findings of a special jury, in the libel action Stopes *v.* Sutherland and another, reported in the BRITISH MEDICAL JOURNAL of March 10th (pp. 445–448).

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

"S." asks for information as to untoward immediate and remote general or nervous symptoms that have been observed, directly or indirectly attributable to the administration of vaccines in large doses or over a lengthy period. He would also like references to the subject.

LUNG DISEASE AND WIND INSTRUMENTS.

"EMPHYSEMA" writes: I should be very grateful to have some advice in the following matter. A man aged 39 developed catarrhal tuberculosis (without consolidation) in 1912-13. He had a mild attack of haemoptysis, passed one winter season in Switzerland, and has been free from active symptoms since 1914. The lesions were localized to the apex of the right lung and the middle lobe, and appear now to be in a fibrous condition. The patient would like to know whether any bad—or possibly good—effects would come to him from an habitual performance on one of the wooden reed instruments—the clarinet, the oboe, or the bassoon. The first instrument appears to me the most appropriate one; the oboe necessitates frequent holding of the breath, and the bassoon requires more power. Is it possible for any of the above mentioned instruments to produce emphysema, and would this be harmful to my patient?

INCOME TAX.

"SURGEON LIEUTENANT R.N.," who purchased a car in December, 1922, to use partly for pleasure and partly for attending classes some distance from his station, asks whether anything is allowable for this expense or for the fee charged at the classes.

*** If it is a specific condition of our correspondent's appointment that he shall attend these classes we consider that he is entitled to the minimum necessary expense—that is, in this case the train fares and the class fee; otherwise he is not entitled to any allowance for the expense incurred in improving his professional knowledge. Any allowance due should be claimed from the Assessor for the Admiralty, who is responsible for the correct assessment of his naval pay.

Car Transactions.

"C. F." bought (1) a 9-h.p. in 1908 for £215 and sold it in 1911 for £15; he then bought (2) a 15-h.p. for £315 and sold it in March, 1923, for £50, buying a 10/23-h.p. (R.A.C. rating=9 h.p.) car for £375. The expense of replacing (1) may have been dealt with in 1911, but is in any case now out of date. The expense of replacing (2) is £375−£50=£325, and that sum is an allowable professional expense as at March, 1923—that is, of the year 1923 if "C. F." bases his return on the three calendar years ending December 31st, or of the year 1922-23 if he takes the three years to March 31st; in the former case his income-tax liability is not affected until the financial year 1924-25.

"W. F. B. S." bought a four-seater in 1921 and sold it for £190 in 1922, buying a two seater for £235. The expense of replacement is £235−£190=£45, and no more can be claimed. But our correspondent should note the facts for future use, as a further allowance will be due if he replaces his present car by a superior one at a later date.

"SCODEN" sends two sets of car transactions. In the first the allowance to be claimed is £495−£200 = £295—that is, the actual cost of replacement, seeing that the cost of the new car is no greater than that of the original car when purchased. In the second case, as an improvement has been effected through the replacement, the amount to be claimed is £250−£80—that is, £170, and *not* £395 − £80 = £315.

"W. G. S." sold a 10-h.p. Swift (cost when new £210) for £70 and bought another make for £470. The amount claimable is the out-of-pocket expense—that is, £470 − £70 = £400—less the amount representing improvement—that is, £470 − £210 = £260; so that the net amount to be allowed is £400 − £260 = £140.

LETTERS, NOTES, ETC.

RAT-BITE FEVER.

CAPTAIN S. K. CHAUDHURI, M.B.E., late I.M.S., Chief Medical Officer, Lovett Hospital, Ramnagar, Benares State, sends a report of the following case of rat-bite fever, and inquires as to the occurrence of an eruption.

A. H., Mohammedan, a surgical dresser, aged 30, while sleeping in his room on September 7th, 1922, was bitten a little above the left knee externally by a large rat which fell from the ceiling. Blood oozed out for a few minutes, but stopped after a surgical dressing soaked in cold water had been applied. For a week there was neither pain nor fever, and he attended his work as usual. On September 15th the spot bitten suddenly became inflamed and he had a temperature of 99° F. Boric fomentation and ichthyol application brought about temporary relief. On September 24th the swelling, which had become hard, brawny, and carbuncular in appearance, was freely incised, but there was no pus. Fever remained less till September 27th, when the temperature rose again to 103° F., and a shotty and painful eruption made its appearance; it was distributed all over the body, but was most marked on the forehead. A simple diaphoretic was prescribed. Four days later, when the temperature came down to 99° F., neo-salvarsan (0.3 gram) was given intravenously. An hour later he had a shiver which lasted for an hour. After that he not only felt relieved but slept well for the first time since the beginning of the inflammation and fever. The eruption rapidly faded, there being no trace left three days later. He remained free from fever till October 12th; then there was again a rise of temperature which lasted till October 18th. On this date neo-salvarsan (0.6 gram) was given intravenously. The temperature fell rapidly and he made a complete and uninterrupted recovery. It is possible that the eruption was caused by potassium bromide which had been given to induce sleep, but it was not like typical bromide rash.

*** In *The Manual of Tropical Medicine* by Castellani and Chalmers the eruption in rat-bite fever is described as consisting of purple spots often resembling erythema polymorphum. Otherwise the symptoms described above appear to be fairly typical of a mild attack.

HICCUP.

DR. R. W. S. CHRISTMAS (South Benfleet, Essex) writes: The correspondence on this subject is very interesting to me. Many years ago (1899) you published a letter of mine on this subject. My case was a most severe one; the patient hiccuped continuously for nine days, and almost died. Most kinds of treatment were tried, but with no good result; even under morphine-atropine, although he slept, the hiccup never ceased. He was seen in consultation and the injections were pushed to full extent. I had used liquor trinitrinae in many cases of spasmodic conditions with good results, and so thought I would try it in this one: it was really the therapeutics of despair. He commenced first thing in the morning with 1/2-minim doses every hour for three hours; then 1-minim, then 2-minims; to my delight by 9 p.m. the hiccup ceased. There was no return, and the patient pulled through. The week after the publication of my letter Dr. Bezly-Thorne wrote to say that he had tried the same drug in a severe case of hiccup with perfectly good results.

CORRECTION.

IN the list of books recommended to a correspondent who proposes to sit for the examination in psychological medicine (BRITISH MEDICAL JOURNAL, March 10th, p. 450) that by Dr. T. W. Mitchell is entitled *The Psychology of Medicine*—not *Medical Psychology*.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 34, 35, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page 95.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page) ...	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.